AUG 3 0 1988

Docket Nos. 50-354
50-272
50-311

Public Service Electric & Gas Company
ATTN: Mr. Steven E. Miltenberger
Vice President and Chief Nuclear Officer
Post Office Box 236
Hancocks Bridge, New Jersey 08038-4800

Gentlemen:

Subject: Federal Emergency Management Agency (FEMA) Evaluation Report of the Alert and Notification System for the Artificial Island Nuclear Generating Stations

Enclosed is a FEMA transmittal letter, dated July 29, 1988, with the subject evaluation report. The letter states the alert and notification system meets the requirements of NUREG 0654/FEMA-REP-1, Revision 1, and FEMA REP-10 and that there is reasonable assurance that the system is adequate to promptly alert and notify the public in the event of a radiological emergency. Additionally, the caveat on the alert and notification systems contained in Title 44 CFR 350, approved for the State of Delaware, dated June 5, 1986, has been removed.

If you or your staff have any questions regarding the above or the enclosure, please give me a call (FTS 346-5200).

Original Signed By:
Ronald R. Bellamy

Ronald R. Bellamy, Chief
Facilities Radiological Safety and
Safeguards Branch
Division of Radiation Safety and
Safeguards

Enclosure:
As Stated

cc w/encl:
S. LaBruna, General Manager, Hope Creek Operations
Scott B. Ungerer, Manager, Joint Generation Projects Department, Atlantic Electric Company
L. A. Preston, General Manager - Licensing and Regulation
R. Fryling, Jr., Esquire
Licensing Project Manager, NRR
Jack Urban, General Manager, Fuels Department, Delmarva Power & Light Co.
J. M. Zupko, Jr., General Manager - Salem Operations
B. A. Preston, Manager, Licensing and Regulation
M. J. Wetterhahn, Esquire
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector (Salem and Hope Creek)
State of New Jersey

bcc w/encl:
Region I Docket Room (with concurrences)
Management Assistant, DRMA (w/o encl)
DRP Section Chief
Robert J. Bores, DRSS
B. Clayton, EDO

RI:DRSS	RI:DRSS	RI:DRSS
Fox/slj	Lazarus	Bellamy
8/24/88	8/24/88	8/26/88

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08/23/88

Enclosure

Federal Emergency Management Agency

Washington, D.C. 20472

JUN 29 1988

Mr. Victor Stello, Jr.
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Stello:

The Federal Emergency Management Agency (FEMA) has completed an analysis of the prompt alert and notification system for the Artificial Island Nuclear Generating Stations located in Lower Alloways Creek Township, New Jersey. This review has been completed pursuant to Title 44 CFR, Part 350; selected evaluative criteria and Appendix 3 in NUREG-0654/FEMA-REP-1, Revision 1; and FEMA REP-10, the "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants." The enclosed report entitled, "Artificial Island Nuclear Generating Stations Site-Specific Offsite Radiological Emergency Preparedness Alert and Notification System Quality Assurance Verification," summarizes the engineering design review; incorporates the results of the telephone survey of the public conducted following full activation of the alert and notification system on December 10, 1986, and confirms the adequacy of the applicable evaluative criteria from NUREG-0654/FEMA-REP-1, Revision 1, and FEMA REP-10.

Based on the engineering design review and the results of the December 10, 1986, public telephone survey, FEMA has determined that the alert and notification system installed around the Artificial Island Nuclear Generating Stations satisfies the requirements of NUREG-0654/FEMA-REP-1, Revision 1, and FEMA REP-10. Therefore, there is now reasonable assurance that the system is adequate to promptly alert and notify the public in the event of a radiological emergency at the site. The caveat on the alert and notification system contained in the Title 44 CFR, Part 350, approval for the State of Delaware, dated June 5, 1986, is now removed. The Honorable Michael Castle, Governor of Delaware, has been advised of this approval. A review and approval of the plans and preparedness pursuant to Title 44 CFR, Part 350 for the New Jersey portion of the emergency planning zone will be completed by FEMA at a later date.

Notwithstanding this approval, FEMA recommends that the States of New Jersey and Delaware, the local jurisdictions, and Public Service Electric and Gas consider increasing the frequency of the full-cycle tests of the Artificial Island alert and notification system to once a month. FEMA believes that additional full-cycle tests, at a monthly frequency, would provide an added degree of assurance of the continued readiness and operability of the Artificial Island alert and notification system.

Sincerely,

for Robert McGaughy

Grant C. Peterson
Associate Director
State and Local Programs
and Support

8807190258

Enclosure

ARTIFICIAL ISLAND NUCLEAR GENERATING STATIONS SITE-SPECIFIC OFFSITE RADIOLOGICAL EMERGENCY PREPAREDNESS ALERT AND NOTIFICATION SYSTEM QUALITY ASSURANCE VERIFICATION

Prepared for

Federal Emergency Management Agency
Washington, D.C. 10472
Under Contract No. EMW-83-C-1217

June 16, 1988

ARTIFICIAL ISLAND NUCLEAR GENERATING STATIONS SITE-SPECIFIC OFFSITE RADIOLOGICAL EMERGENCY PREPAREDNESS ALERT AND NOTIFICATION SYSTEM QUALITY ASSURANCE VERIFICATION

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TABLE OF CONTENTS

Artificial Island Nuclear Generating Stations Site-Specific Offsite Radiological Emergency Preparedness Alert And Notification System Quality Assurance Verification

State of New Jersey

Cumberland County
Salem County

State of Delaware

Kent County
New Castle County

I. INTRODUCTION

A. Identification

1. Site Information

The Artificial Island Nuclear Generating Stations (comprised of the Salem Nuclear Generating Station and the Hope Creek Nuclear Generating Station) are located on the southern tip of Artificial Island in Lower Alloways Creek Township, Salem County, New Jersey. The Artificial Island (actually an artificial peninsula) projects from the eastern shore about one-third of the way across the Delaware River, which has a width of approximately 2.5 miles at this location. The stations are roughly midway between Wilmington and Dover, Delaware, which are approximately 20 miles north and south of the site, respec-

tively. Philadelphia, Pennsylvania lies 32 miles north-northeast of the site.[1]

The Artificial Island Nuclear Generating Stations are located on the low-lying coastal plain of New Jersey. Most of the land within three miles of the site is undeveloped, as the land is dominated by tidal marshes and the Delaware River. The surrounding region is mostly flat, featuring extensive marsh and meadow land and some farm land. Major farm products within a 25-mile radius of the site include vegetables, poultry, dairy products, and field crops.[1]

There are numerous recreational areas and facilities within 10 miles of the Artificial Island Nuclear Generating Stations, mostly related to the beach areas along the Atlantic Coast, as well as the Delaware River and Bay. The larger wildlife areas include Augustine Creek, Reedy Island, Appoquinimink, Mad Horse Creek, Woodland Beach, and Canal National Wildlife Refuge. In addition to its recreational uses, the Delaware River is a major route for barge and freight traffic between the Philadelphia area ports and the Atlantic Ocean.[2]

2. <u>Governments Within The 10-Mile Emergency Planning Zone</u>

The emergency planning zone (EPZ) for the Artificial Island Nuclear Generating Stations is defined by an irregular shape approximating a 10-mile radius circle with the stations as the center point. The irregular shape of the EPZ results from its delineation along existing physical and political boundaries.[1] The

EPZ is divided roughly in half by the Delaware River, with the western half of the EPZ located in the State of Delaware (including portions of Kent County and New Castle County), and the eastern half located in the State of New Jersey (including portions of Cumberland County and Salem County).[1]

The 1985 resident population of the Artificial Island Nuclear Generating Stations EPZ was 26,700 persons.[1] The two largest towns located within the EPZ are Salem, New Jersey (1980 population 6,959 persons), located 8 miles north-northeast of the stations, and Middletown, Delaware (1980 population 2,946 persons), located 10 miles west of the stations.[1,2] Within the 10-mile EPZ there are also significant transient populations related to the use of the Delaware River; however, no official estimates of the marine population on the Delaware River and Bay during an average summer day are available. There are no areas within the Artificial Island Nuclear Generating Stations EPZ where population density exceeds 2,000 persons per square mile.[1,2]

B. Scope of Review

1. Emergency Plans For Offsite Response Organizations

Public Service Electric and Gas Company's report, "Alert and Notification System for the Artificial Island Nuclear Generating Stations"[1] (hereinafter referred to as the Design Report) describes the public alert and notification system evaluated in this quality assurance verification review.

Excerpts from state, local, and organizational radiological emergency response plans and implementing instructions applicable to this review are included as attachments to the Design Report. Addressed were:

- Public Service Electric and Gas Company;
- State of New Jersey;
- Salem County;
- Salem County municipalities;
- Cumberland County;
- Cumberland County municipalities;
- State of Delaware;
- Kent County;
- New Castle County;
- Emergency Broadcast System;
- U.S. Coast Guard.

The Design Report documents the administrative means established for notifying and providing prompt instructions to the public within the Artificial Island Nuclear Generating Stations EPZ.

2. Alert And Notification System Design Report

The physical means established for alerting the public within the Artificial Island Nuclear Generating Stations EPZ are documented in Section 1.0 and Subsection 3.8.2 of the Design Report.

3. FEMA Evaluation Findings

The Federal Emergency Management Agency (FEMA) Regions II and III and the appropriate Regional Assistance Committees have evaluated the following

offsite emergency preparedness exercises for the Artificial Island Nuclear Generating Stations:

- FEMA, "Post Exercise Assessment - Exercise of the New Jersey State and Local Radiological Emergency Plans for Artificial Island (Salem Nuclear Generating Station)," April 24, 1981;[12]

- FEMA, "Delaware REP Exercise - Observations and Recommendations," April 8, 1981;[11]

- FEMA, "Post Exercise Assessment, October 13, 1982 Exercise of the Radiological Emergency Response Plans of the States of New Jersey and Delaware and County and Local Jurisdictions Affected by the Salem Nuclear Generating Station," May 13, 1983;[3]

- FEMA, "Post Exercise Assessment, October 26, 1983, Exercise of the Radiological Emergency Response Plans of the State of New Jersey, Salem County and Six Localities, and Cumberland County and Two Localities for Public Service Electric and Gas Company's Salem Nuclear Generating Station, Revision 2," March 12, 1984;

- FEMA, "Exercise Evaluation Report, Salem Generating Station, Lower Alloways Township, Salem County, New Jersey, October 26, 1983," November 25, 1983;[5]

- FEMA, "Post Exercise Assessment, October 23, 1984, Exercise of the Radiological Emergency Response Plans of the State of New Jersey, Salem

County and Six Localities, and Cumberland County and Two Localities for Public Service Electric and Gas Company's Salem Nuclear Generating Station," February 19, 1985;[6]

. FEMA, "Exercise Evaluation Report, Artificial Island Generating Station (consisting of Salem and Hope Creek Reactors), Lower Alloways Township, Salem County, New Jersey, October 29, 1985, Remedial Date November 15, 1985," January 15, 1986;[7]

. FEMA. "Post Exercise Assessment, April 23, 1985, Remedial Exercise of the Radiological Emergency Response Plans of the State of New Jersey, Salem County and Six Localities for Public Service Electric and Gas Company's Salem Nuclear Generating Station," June 19, 1985;[13]

. FEMA, "Post Exercise Assessment, November 12, 1986, Exercise of the Radiological Emergency Response Plans of the State of New Jersey, Salem County and Six Localities, and Cumberland County and Two Localities for Public Service Electric and Gas Company's Artificial Island Site; Hope Creek Nuclear Generating Station", May 12, 1987.[14]

. FEMA, "Exercise Evaluation Report, Artificial Island Generating Station," November 12, 1986, January 16, 1987.[19]

II. FINDINGS FOR EVALUATION CRITERION E.6

The Design Report describing the alert and notification system for the Artificial Island Nuclear Generating Stations was reviewed against evaluation criterion E.6 and Appendix 3 of NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (hereinafter referred to as NUREG-0654/FEMA-REP-1, Rev. 1). This evaluation criterion states:

> Each organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone. (See Appendix 3.) It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this requirement. It shall be the responsibility of the State and local governments to activate such a system.[8]

The bases for review against this evaluation criterion were the corresponding acceptance criteria of FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants"[9] (hereinafter referred to as FEMA-REP-10). This quality assurance verification review was performed to make a determination of alert and notification system adequacy prior to conducting a demonstration of this system for the Artificial Island Nuclear Generating Stations.

Based upon this quality assurance verification review, International Energy Associates Limited concluded that the design and implementation of the alert and notification system for the Artificial Island Nuclear Generating Stations and its supporting procedures conformed sufficiently to the acceptance criteria, as stated in FEMA-REP-10, for

evaluation criterion E.6 of NUREG-0654/FEMA-REP-1, Rev. 1, to support a FEMA finding that the alert and notification system is adequate.

This portion of the quality assurance verification review evaluates Artificial Island Nuclear Generating Stations' alert and notification system against FEMA-REP-10 acceptance criteria in the following areas: the administrative means of alerting, the physical means of alerting, and the special alerting methods.

A. Administrative Means of Alerting (E.6.1, FEMA-REP-10)

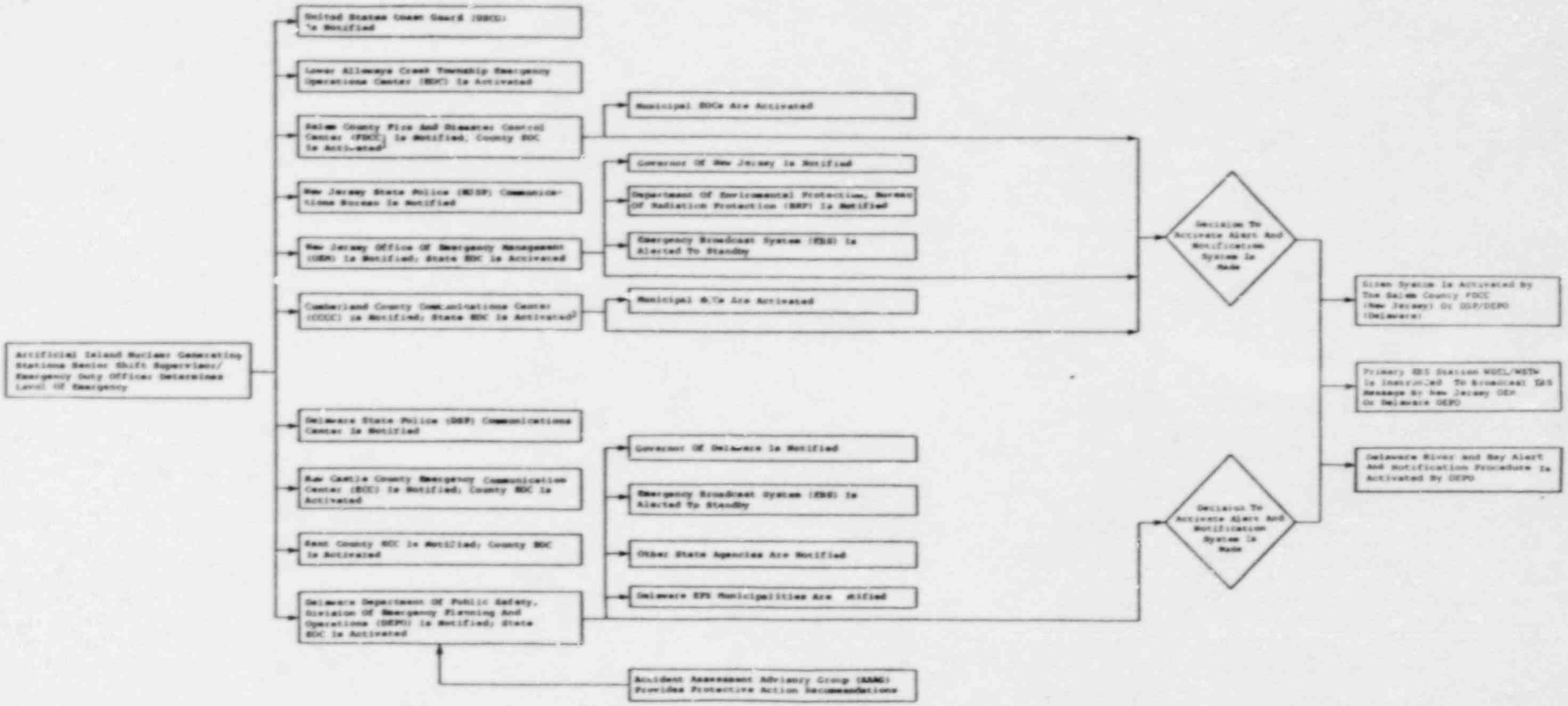
The Design Report specifies those organizations or individuals within the state and local governments who are responsible for recommending alert and notification system activation for the Artificial Island Nuclear Generating Stations. The decision logic shown in Figure 1 of this report was developed after a review of the current emergency procedures and implementing instructions for the Artificial Island Nuclear Generating Stations, the states of New Jersey and Delaware, and Salem, Cumberland, New Castle, and Kent Counties.

As Figure 1 indicates, these procedures satisfy FEMA-REP-10 acceptance criteria. The current emergency procedures document the responsibilities concerning the alert and notification system activation process from the time the emergency message is conveyed from the Artificial Island Nuclear Generating Stations control rooms to the state and county warning points and to the state and county officials who are responsible for making the decision to activate the public alert and notification system.

FIGURE 1

ARTIFICIAL ISLAND NUCLEAR GENERATING STATIONS

ALERT AND NOTIFICATION SYSTEM ACTIVATION
DECISION/ACTION SEQUENCE DIAGRAM



[1] During Non-Business Hours, The Salem County FCCC Will Serve As Backup For The County EOC.

[2] During Non-Business Hours, The CCCC Will Serve As Backup For The County EOC.

Initial determination of an emergency classification which may require protective actions is made by the Senior Shift Supervisor/Emergency Duty Officer (EDO) at the Artificial Island Nuclear Generating Stations. (For all site emergency situations, the Senior Shift Supervisor becomes the temporary EDO; the Senior Shift Supervisor is relieved of the duties of EDO as soon as a designated member of station management reports on-site.) The EDO initiates the notification process by contacting state and local warning points via the Nuclear Emergency Telecommunications System (NETS), a network of dedicated telephone circuits connecting the Artificial Island Nuclear Generating Stations with the primary offsite emergency response organizations. NETS is backed up by Emergency Radio (EMRAD) for the State of New Jersey and the National Warning System (NAWAS) for the State of Delaware, as well as commercial telephone lines. In a general emergency, the EDO notifies Salem and Cumberland Counties directly.[18]

To notify the State of New Jersey, the station EDO notifies the State Police Communications Bureau. Immediately upon activation of the State EOC, telephone messages from AINGS are routed directly to the State Emergency Operations Center (EOC) rather than through the NJSP Communications Bureau. The EDO also notifies Lower Alloways Creek Township and at a General Emergency, the U.S. Coast Guard. The Coast Guard is notified directly by the State beginning at the alert level.

Salem and Cumberland Counties are notified directly by the station EDO at a General Emergency. The State OEM Operation Officer in turn notifies Salem and Cumberland Counties, thus providing redundant notification of the Counties at a General Emergency.[15]

Notification calls to Salem County from either the station EDO or the State OEM ring simultaneously at both the County EOC and the Fire and Disaster Control Center (FDCC). During nonbusiness hours, the Salem County FDCC serves as a backup to the County EOC until the staff can be assembled and the EOC activated.

Similarly, notification calls to Cumberland County from either the station EDO or the State OEM ring simultaneously at the County EOC and the Cumberland County Communications Center (CCCC). During nonbusiness hours, the CCCC serves as backup for the County EOC until the staff can be assembled and the EOC activated.

The New Jersey OEM also notifies the Department of Environmental Protection's Bureau of Nuclear Engineering (BNE),[15] the Governor of New Jersey, supporting state, private, and federal agencies, and notifies the Emergency Broadcast System (EBS) network to standby. The authority to activate the public notification system from the State of New Jersey rests with the Director of the State OEM or his designee, and, in the event of a rapidly developing emergency, with the Salem and Cumberland County Emergency Management Coordinators (EMCs). The New Jersey control point for physical activation of the siren system is located in the Salem County FDCC. New Jersey State Police OEM personnel activate the EBS from the State EOC; Salem and Cumberland Counties' EMCs are authorized direct contact to EBS outlets during rapidly developing emergencies or spurious siren activations. The Governor or his representatives are also authorized to activate the public notification system.

To notify the State of Delaware, the Artificial Island Nuclear Generating Stations EDO promptly notifies the New Castle and Kent Counties' Emergency Communications Centers (ECCs) which will activate the county EOCs. The station EDO will also notify the Delaware State Police (DSP) Communications Center and the Delaware Department of Public Safety's Division of Emergency Planning and Operations (DEPO), which fully activates the State EOC (located at DEPO Headquarters). DEPO in turn notifies the Governor, other state emergency response agencies, Delaware EPZ municipalities, and the EBS network. The Accident Assessment Advisory Group (AAAG), located at the State EOC, may recommend implementation of protective actions to the DEPO Director. In a rapidly escalating emergency, protective actions may be ordered by the state based on recommendations from the station EDO.

The DSP Communications Center is responsible for the physical activation of the siren system upon authorization of the Director of DEPO, the Governor, or their designees. The siren system activation point is located at the DSP Communications Center. In the event the public notification system must be activated during hours when the State EOC is unmanned, either the Governor of Delaware, the Director of DEPO, or their designees must contact the DSP Communications Center and authorize activation of the siren system. The EBS is activated upon authorization by the Governor of Delaware, the Director of DEPO, or their designees.

EBS Gateway Radio Station WDEL-AM of Wilmington, Delaware was mutually agreed upon by both Delaware and New Jersey as the point of contact to activate the EBS network. Once the message to activate the system has been received and verified with an appropriate authentication number, WDEL's FM counterpart, WSTW, relays the message to all primary EBS radio stations which serve the area affected by the emergency. The information is repeated every 5 minutes and updated as the situation changes. These broadcasts are monitored by the state and county EOCs to ensure that accurate information is being transmitted, and automatically activate the tone alert radios that have been distributed to businesses, institutions, and special facilities in the Artificial Island Nuclear Generating Stations EPZ.

To activate the special alerting procedures which have been developed to alert both commercial and sporting users of the Delaware River and Bay within the EPZ, the Governor of Delaware, the Director of DEPO, or their designees call the following participating river and bay alert and notification agencies to scramble and stage equipment and personnel upon declaration of an alert emergency action level: the U.S. Coast Guard, U.S. Army Corps of Engineers, Delaware Marine Police, Delaware State Police, and Delaware National Guard.

FEMA exercise evaluations (References 3 through 7, 11 through 14, and reference 19) have demonstrated that the administrative mechanisms are in place to provide prompt notification to the general public in the event of an emergency at the Artificial Island Nuclear Generating Stations.

B. Physical Means Of Alerting (E.6.2, FEMA-REP-10)

As described in Section 1.0 and Subsection 3.8.2 of the Design Report, the primary physical means of alerting for the Artificial Island Nuclear Generating Stations consist of 71 fixed siren units and special alerting procedures for water and marsh land areas.

1. Sirens (E.6.2.1, FEMA-REP-10)

The Artificial Island Nuclear Generating Stations siren alerting system, as described in the Design Report, was evaluated in accordance with the design evaluation methodology detailed in "Analysis of Siren System Pilot Test."[10]

The siren system consists of 12 Cyclone sirens rated at 125 dBC, 2 Banshee sirens rated at 115 dBC, and 57 Penetrator-10 sirens rated at 125 dBC. All of the sirens are manufactured by Alerting Communicators of America (ACA).

Routine siren testing procedures and operability for the Artificial Island Generating Stations siren alerting system have been reviewed and determined to satisfy FEMA-REP-10 operability requirements.

Anechoic-chamber measured octave band sound pressure spectrums (supplied by the siren manufacturer) were used to verify the rated output of all of the sirens. The evaluation of the siren system design calculation procedure was conducted by ascertaining the adequacy of the design procedure in the presence of site-

specific topographical and meteorological conditions by comparing the Design Report's coverage contours with the Outdoor Sound Propagation Model (OSPM)[10] results for specific sirens.

The Artificial Island Nuclear Generating Stations siren alerting system design procedure is described on page 3 of Subsection 3.8.2 of the Design Report. Siren sound level contours were determined by use of a computer model. The computer model calculated sound attenuation with distance due to hemispherical wave divergence, atmospheric absorption, absorption due to vegetation and other types of ground cover, propagation of sound over water, propagation of sound through urban and suburban areas, upwind sound shadows, and topographical barriers. Summer daytime average weather conditions for the sites were used in the calculations.

The 60 dBC and 70 dBC coverage areas are depicted on Map 1 of the Design Report. Population distributions within the EPZ and all areas within the EPZ that lie outside the 60 dBC contours are also depicted on Map 1. Section 1.0 of the Design Report states that these areas have been investigated and were found to be uninhabited.

This quality assurance verification review seeks to ascertain whether the design procedure used adequately accounts for the site-specific terrain and weather conditions and whether the siren alerting system for the Artificial Island Nuclear Generating Stations does indeed meet FEMA-REP-10 acceptance criteria. Eleven sirens, seven of which are depicted on the

U.S. Geological Survey's Delaware City quadrangle map (see Figure 2 of this report), were selected for this quality assurance verification review. Surface weather parameters, representative of site prevailing summer daytime conditions, were used in the OSPM calculations. Appendix A of this report contains OSPM topographical profile charts, OSPM topographical input, OSPM sound pressure level input, OSPM meteorological input, and OSPM sound pressure level output for each of the eleven individual siren runs.

To compare the ranging estimates of OSPM with the design procedure, the analyzed azimuths for the 11 sirens were classified into two categories according to terrain profiles: partially hilly (minor obstructions) and relatively flat (generally unobstructed line-of-sight within 10,000 ft).

Regressions of dBC versus the logarithm of distance were performed for the siren types over the varying terrain conditions. These regressions were computed utilizing both OSPM and Design Report model data. The Design Report's data were taken from Section 1.0 of the Design Report for azimuths closely corresponding to each OSPM-analyzed azimuth. The results are depicted in Figures 3 through 5 of this report. Also depicted are the licensee's design ranges for 70 dBC and 60 dBC from Table 3-1 of Subsection 3.8.2 of the Design Report.

It can be seen from Figures 3 through 5 of this report that the effective 70 dBC and 60 dBC range estimates provided by the design procedure are similar

FIGURE 2

ARTIFICIAL ISLAND SIREN CONTOUR PLOT

FIGURE 3

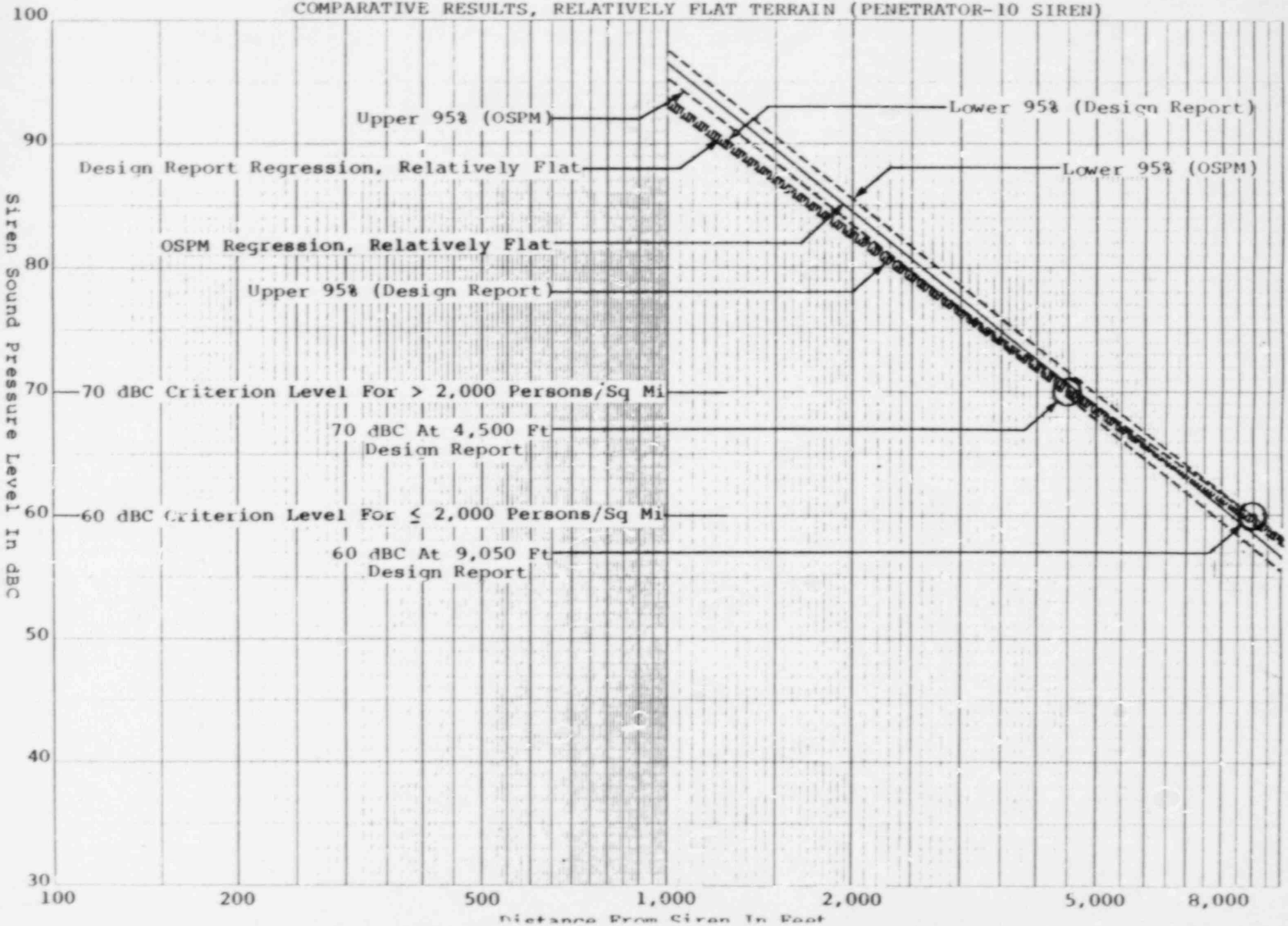

COMPARATIVE RESULTS, RELATIVELY FLAT TERRAIN (PENETRATOR-10 SIREN)
Upper 95% (OSPM)
Lower 95% (Design Report)
Design Report Regression, Relatively Flat
Lower 95% (OSPM)
OSPM Regression, Relatively Flat
Upper 95% (Design Report)
70 dBC Criterion Level For > 2,000 Persons/Sq Mi
70 dBC At 4,500 Ft Design Report
60 dBC Criterion Level For ≤ 2,000 Persons/Sq Mi
60 dBC At 9,050 Ft Design Report
Siren Sound Pressure Level In dBC
100
90
80
70
60
50
40
30
100
200
500
1,000
2,000
5,000
8,000
Distance From Siren In Feet

FIGURE 4

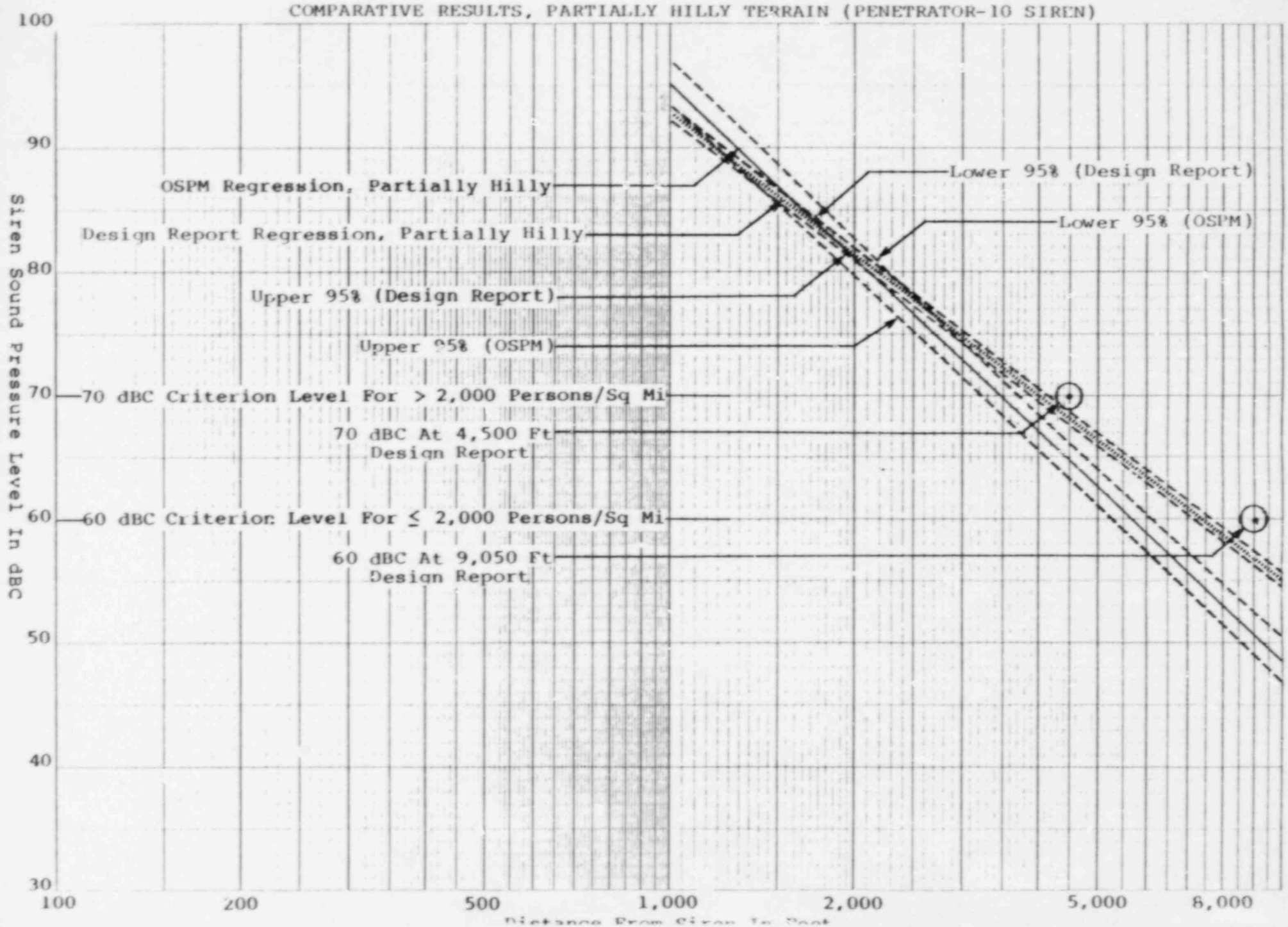
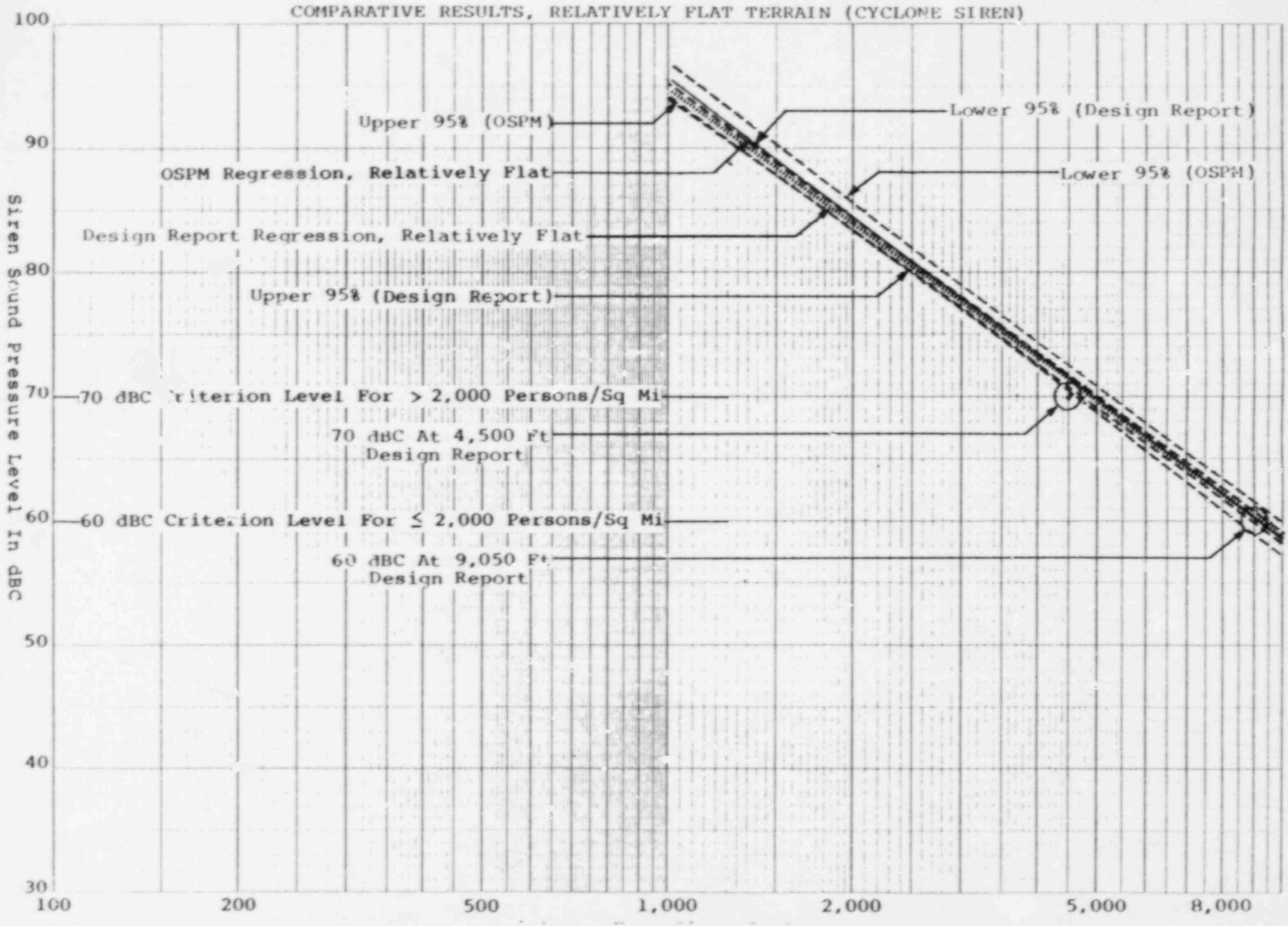

COMPARATIVE RESULTS, PARTIALLY HILLY TERRAIN (PENETRATOR-10 SIREN)
Siren Sound Pressure Level In dBC
100
90
80
70
60
50
40
30
OSPM Regression, Partially Hilly
Design Report Regression, Partially Hilly
Upper 95% (Design Report)
Upper 95% (OSPM)
70 dBC Criterion Level For > 2,000 Persons/Sq Mi
70 dBC At 4,500 Ft
Design Report
60 dBC Criterion Level For ≤ 2,000 Persons/Sq Mi
60 dBC At 9,050 Ft
Design Report
Lower 95% (Design Report)
Lower 95% (OSPM)
100
200
500
1,000
2,000
5,000
8,000
Distance From Siren In Feet

FIGURE 5


COMPARATIVE RESULTS, RELATIVELY FLAT TERRAIN (CYCLONE SIREN)
Siren Sound Pressure Level In dBC
100
90
80
70
60
50
40
30
100
200
500
1,000
2,000
5,000
8,000
Upper 95% (OSPM)
OSPM Regression, Relatively Flat
Design Report Regression, Relatively Flat
Upper 95% (Design Report)
70 dBC Criterion Level For > 2,000 Persons/Sq Mi
70 dBC At 4,500 Ft
Design Report
60 dBC Criterion Level For ≤ 2,000 Persons/Sq Mi
60 dBC At 9,050 Ft
Design Report
Lower 95% (Design Report)
Lower 95% (OSPM)

compared to OSPM predictions for relatively flat site-specific terrain conditions for the Penetrator 10 siren. The Design Report ranges are liberal compared to the OSPM-derived ranges for the partially hilly category. The effective 70 dBC and 60 dBC range estimates for the Cyclone sirens provided by the licensee's design procedure are very close to OSPM predictions for the relatively flat category.

Table 1 below summarizes the estimated effective ranges to 70 dBC and 60 dBC over the various categories:

TABLE 1

Siren	Procedure	Terrain	Range In Ft To 70 dBC	60 dBC
Cyclone	Design Report Table 3-1	All	4,500	9,050
	OSPM Regression	Flat	4,907	9,166
	Design Report Model Regression	Flat	4,852	9,161
Penetrator-10	Design Report Table 3-1	All	4,500	9,050
	OSPM Regression	Flat	4,602	8,205
		Partially Hilly	3,455	6,663
	Design Report Model Regression	Flat	4,518	8,622
		Partially Hilly	4,002	7,382

Thus, in the presence of the prevailing site topographical and meteorological conditions, the design procedure is judged to be adequate in estimating the effective 70 dBC and 60 dBC siren range.

In conclusion, the Artificial Island Nuclear Generating Stations siren alerting system is found to meet the specific design requirements of FEMA-REP-10.

2. Special Alerting (E.6.2.4, FEMA REP-10)

Special planning considerations for alerting and notifying the public are necessitated by Artificial Island Nuclear Generating Stations' location in Lower Alloways Township, Salem County, New Jersey. Because the stations are on a man-made island which projects from the eastern shore of the Delaware River, a significant portion of the Delaware River and Bay are included within the EPZ. Commercial ocean-type vessels pass within two miles of Artificial Island Generating Stations within the ship channel which extends from the mouth of the Delaware River upstream to the ports of Wilmington, Philadelphia, and Trenton. In addition, the river/bay is used extensively by commercial and sports fishermen, and recreational boaters.

In the vicinity of the stations and to the north, the river is within the jurisdiction of Delaware (the Delaware-New Jersey boundary is not the river's centerline, but the eastern, or New Jersey, shoreline). At a point about one mile south of the island, the state boundary moves from the New Jersey shoreline to mid-river, where it continues southward to beyond the EPZ boundary. Despite the fact that a portion of the Delaware Bay affected by the EPZ is under the jurisdiction of New Jersey, Delaware has assumed the responsibility for alerting and notifying boaters, fishermen and marine traffic within the entire EPZ portion of the waterway.

Many tributaries join the Artificial Island Nuclear Generating Stations' EPZ along the western, or Delaware, shoreline. Among these is the Chesapeake and Delaware Canal, a shipping channel operated by the U.S. Army Corps of Engineers. Other waterways, inlets, coves, and marine features in Delaware are patrolled by the Delaware Marine Police. There are also various park lands along this stretch of the shoreline, including public recreation areas and beaches, which are under the supervision of the Division of Parks and Recreation. Several wildlife refuges are under the jurisdiction of the Division of Fish and Wildlife.

In order to establish a public alert and notification capability compliant with the criteria of FEMA REP-10 for the area described above, the Division of Emergency Planning and Operations has developed a unique plan and procedures. Entitled State of Delaware Route Alerting Plan for Delaware River Marine Traffic and Recreation and Public Areas in the Ten Mile Emergency Planning Zone, it is included as Attachment 11 to the Delaware Radiological Emergency Plan.[19] For the area along the Delaware River and Bay and some isolated marsh lands, the alert and notification procedure is activated by the DEPO. This system includes the use of Marine VHF Channel 16 broadcasts in conjunction with route alerting by helicopters equipped with public address (PA) systems and boats equipped with PA systems and/or hand-held megaphones. The U.S. Coast Guard (USCG) broadcasts warning and protective action messages over Marine VHF Channel 16 in the form of a "Notice to Mariners"

and will include specific instructions for the marine population. The USCG also contacts all marinas, advising them to hold in port all outgoing marine craft. The USCG has developed a plan for responding to an emergency at the Artificial Island Nuclear Generating Stations (see Section 5.0 of the Design Report).[7]

The river/bay alert and notification system includes helicopters and crews from the Delaware National Guard and State Police, river boats and crews from the Delaware Marine Police, and airboats and crews from the Delaware State Police and Division of Emergency Planning and Operations. All helicopters and boats are specially equipped with high power public address systems designed to broadcast prerecorded messages to mariners, boaters and fishermen.

For the State of Delaware, the Delaware Marine Police (DMP), following notification by the DEPO, coordinates the marine route alerting efforts of the Division of Parks and Recreation (DPR), the Division of Fish and Wildlife (DFW), the USCG, the Delaware National Guard (DNG), the Delaware State Police (DSP), and the Army Corps of Engineers (ACE). Cooperative support efforts of the USCG and the ACE are utilized to establish a safety perimeter around the affected area and restrict ship and boat access to the EPZ. Additionally, emergency messages are broadcast on Marine Channel 22, NOAA weather radio, and several Emergency Broadcast System (EBS) stations in New Jersey and Delaware.

The USCG is the primary agency responsible for alert and notification on the Delaware River/Bay, but lacks the resources to accomplish this task without assistance. USCG deploys a helicopter and coordinates with Delaware for additional helicopter alert and notification support. The ACE is responsible for alert, notification, and access control of the Chesapeake and Delaware Canal, while other waterways, inlets, coves, and marine features in Delaware are patrolled by the DMP. The primary means for alerting boats and marine traffic on the open waterway is via two helicopters (operated by the National Guard and State Police) equipped with high power public address (PA) systems. The National Guard is also responsible for maintaining a third helicopter on standby. The helicopters broadcast prerecorded tape messages while flying specified routes.

Supplementing the helicopters are three boats, also equipped with high power PA systems. The DEPO and DSP specially equipped airboats are activated for alert and notification on Delaware waterways as necessary. The Delaware Marine Police boat can provide more direct contact with vessels which may not have heeded the aerial warning. The two air boats are intended for use in the marshy wet-land areas along both the Delaware and New Jersey shorelines.

In addition, there are various park lands along the Delaware River, including public recreation areas and beaches, which are under the supervision of the DPR. Wildlife refuges are under the jurisdiction of the DFW. In New Jersey, the Division of Parks and

Forestry (DPF), the Division of Fish, Game and Wildlife (DFGW), the Marine Law Enforcement Bureau and the State Police assist in the notification of transients within their jurisdictions. (For detail of New Jersey and Delaware Waterborne Transients Alerting System, see Design Report Subsection 3.8.4.5, Section 5, and Attachment 11.)[14]

Tone alert radios have been placed at special facilities (businesses, schools, special care facilities, and recreation areas) throughout the EPZ to supplement the primary system. Notification of these special facilities is also made by telephone from county and municipal EOCs. Backup notification is made by personal contact through the municipal police and fire departments in those municipalities containing special care facilities. The listing of the tone alert locations is kept on file at the Artificial Island Nuclear Generating Stations (see also Design Report Subsection 2.13).

The State of Delaware successfully demonstrated the capability to implement the Route Alerting Plan for Delaware River Marine Traffic and Recreation and Public Areas in the Ten Mile Emergency Planning Zone, which was developed to comply with FEMA-REP-10 criteria for special alerting methods. The plan, procedures, personnel, and equipment necessary to carry out this system were evaluated and performed effectively in a special alerting demonstration conducted in conjunction with the November 12, 1986 Artificial Island Generating Stations exercise for New Jersey and local jurisdictions. In particular, the helicopter-mounted public address systems, the

primary means of delivering the alert and notification messages, produced sufficient volume to be clearly audible to boaters and mariners, even at a considerable distance.

At this exercise, the special alerting procedures demonstrated the following:

1. Adequate procedures to alert and notify the responsible organizations, and mobilize the necessary emergency response personnel, for implementing the Route Alerting Plan for Delaware River Marine Traffic and Recreation and Public Areas;

2. The existence and adequacy of emergency facilities, equipment, vehicles and vessels to implement the Route Alerting Plan for Delaware River Marine Traffic and Recreation and Public Areas;

3. Adequate communications equipment and procedures to establish notification and communications links among all appropriate organizations, locations and field units;

4. The capability to alert and notify boaters and mariners upon the open waterways of the Delaware River and Bay, and the Chesapeake and Delaware Canal within the following time limits:

    a. for those within five miles of the Artificial Island Generating Stations, within 15 minutes;

b. for those between five and ten miles from the Artificial Island Generating Station, within 45 minutes; and

5. The capability to provide a supplementary means of alerting and notifying hunters, fishermen, hikers and other recreational users and transients within the vicinity of the marshy wetlands along the Delaware River/Bay shorelines.

III. FINDINGS FOR EVALUATION CRITERION N.1

On December 10, 1986, the physical means (sirens) used to alert the population within the Artificial Island Nuclear Generating Stations EPZ were demonstrated to satisfy the alert and notification aspects of 44 CFR 350.9(a). This demonstration was conducted by using the methods specified in Section N.1.(a,b).2 of FEMA-REP-10.[9] The results indicate that this portion of the alert and notification system evaluation conforms to FEMA-REP-10 and NUREG-0654/ FEMA-REP-1, Rev.1.[8]

The December 10, 1986 demonstration of the Artificial Island Nuclear Generating Stations siren alerting system consisted of a single activation of all sirens on the Delaware side, approximately 1:00 to 1:03 p.m. Eastern Standard Time (EST), and four activations on the New Jersey side, beginning at approximately 1:00 p.m. EST and concluding at approximately 1:17 p.m. EST. After the completion of all siren activations, a telephone survey was initiated to estimate the proportion of EPZ households actually alerted. It was reported that siren numbers 201, 205, and 217 in Delaware failed to activate properly. All other sirens were reported to have operated properly during both activations.

The telephone survey of EPZ residences began at approximately 1:15 p.m. EST and was completed within one hour and ten minutes. This survey was conducted by 33 telephone interviewers, each with a separate WATS line and computer terminal.

The universe of households to be surveyed was determined by establishing a 10-mile-radius circle around the latitude

and longitude of the plant. The sample incorporated a sorted master list of approximately 2,500 households (addresses and telephone numbers) within the established boundary.

A sufficient number of replicated subsamples were developed from the overall sample to ensure that the required number of telephone calls would be made, i.e., to establish the proportion of households alerted to within a 5% precision at a 95% confidence level. Appendix B of this report describes the method used for sizing the sample to achieve this result.

The questionnaire used for the telephone survey is included as Figure 6 of this report.

As part of the telephone survey, 336 households believed to be within the Artificial Island Nuclear Generating Station's EPZ were contacted, and the responses were collected in an automated data base. Of this group, 84 respondents stated that they were not alerted. However, before running the final tabulations, addresses of all households interviewed were checked on a street map to validate their locations. Of the 336 addresses, 32 were outside the EPZ. Seven of the 32 were households that reported that they were alerted and 25 of the 32 were households that reported that they had not been alerted. Therefore, data were tabulated on the 304 respondent households that were located within the EPZ. Respondents at 48 of these households had been away from home at the time of the alerting system demonstration and, therefore, were not included in the alerting analysis. The siren

Figure 6-1
Questionnaire

#3410Q
Chilton Research Services
Radnor, Pennsylvania

Study #6761
December 10, 1986

OMB #3067-0103 (FEMA 9/86)
FEMA NUCLEAR POWER PLANT ALERTING AND NOTIFICATION SYSTEM: PUBLIC TELEPHONE SURVEY
ARTIFICIAL ISLAND

Time Began _____AM _____PM

Time Ended _____AM _____PM

Interview # _____ (1-5)

Zip Code _____ (6-10)

Sample Type _____ (11)

RECORD BEFORE DIALING -Telephone # _____ (Area Code) (Exchange) (Number) (12-21)

INTRODUCTION:

Hello, my name is _____. We're calling households long distance from Chilton Research Services as part of a survey. This survey is sponsored by The Federal Emergency Management Agency (FEMA) of the United States Government.
Your answers are voluntary and will be kept strictly confidential.

1. First of all, is this (REPEAT # DIALED)?

	Yes	1
TERMINATE AND DIAL AGAIN	No	2

2. As you may or may not know, there was a test of the public warning/alert notification system for the Artificial Island Generating Stations. Did you, or any other member of this household, hear the siren/warning signal from this test today?

22-

SKIP TO Q. 4	Yes	1
SKIP TO Q. 4A	No	2
CONTINUE	Heard from another source	3
ASK IF ANY OTHER HOUSEHOLD MEMBER IS MORE KNOWLEDGEABLE	Don't Know	8

Figure 6-2
Questionnaire

3. What did you or your household hear? (DO NOT READ. CIRCLE ALL THAT APPLY)

(23-25)

SKIP TO Q. 4	A siren	1
	Neighbor told me	2
	Other family member told me	3
	EBS on radio	4
	EBS on TV	5
	Other (SPECIFY) _____	9
	_____	
CONTINUE	Don't Know	Y

3a. Did you hear . . . (READ LIST. CIRCLE ALL THAT APPLY)

(30-32)

	A Siren	1
	From Another Family Member	2
	From a Neighbor	3
	Or by means of something else (SPECIFY) _____	9
	_____	
DO NOT READ	Don't Know	Y

4. (IF "HEARD EMERGENCY SIGNAL" ASK Q. 4 BELOW; OTHERWISE SKIP TO Q. 4A)

Were you at home or away from home when you heard the siren signal?

37-

SKIP TO Q. 5	Home	1
	Away From Home	2

Figure 6-3
Questionnaire

4A. (IF "DID NOT HEAR EMERGENCY SIGNAL")

Were you at home around 1:00 this afternoon?

38-

Yes	1
No	2
Don't Know	Y

(IF HOUSEHOLD IN NEW JERSEY ASK:)

5A. Has your household ever received information which tells you what to do in the event of a "real" emergency at the Artificial Island Nuclear Generation Stations? This emergency information was contained in a calendar which had an owl on the cover. Do you remember receiving this information?

41-

Yes	1
No	2
Don't Know	Y

(IF HOUSEHOLD IN DELAWARE ASK:)

5B. Has your household ever received information which tells you what to do in the event of a "real" emergency at the Artificial Island Nuclear Generating Stations? This emergency information was contained in a road map which had a picture of a house on the cover. Do you remember receiving this information?

41-

Yes	1
No	2
Don't Know	Y

6. Because we need to determine whether or not you live within the 10 mile Emergency Planning Zone of the Artificial Island Generation Stations, would you please give me this address? (PAUSE FOR ANSWER)

ADDRESS:

_____

_____

and the nearest intersection (or cross street) to this house.

_____

Also, what community is this?

_____

On behalf of Chilton Research Services and the Federal Emergency Management Agency, I would like to thank you for your time and for giving us this valuable information.

coverage was examined to determine whether the 38 households where individuals were home during the demonstration, but were not alerted, were in the sole or primary coverage area of one of the sirens that failed to operate properly. One household appeared to be in the sole or primary coverage area of siren #27 that failed to operate properly and was therefore excluded from the alerting analysis. Of the remaining 255 households, 85.5% (218) indicated that they had been alerted during the demonstration. Using the estimated number of households within the EPZ (7,923.85 from reference 1) in the confidence interval expression in Appendix B, an estimated 95% confidence interval that ranges from 80.7% to 89.2% is yielded for the proportion of the total EPZ population alerted. In other words, at the 95% confidence level, between 80.7% and 89.2% of the households within the Artificial Island Nuclear Generating Stations EPZ would have stated that they were alerted by the siren system.

The sample of 304 households was also used to estimate the proportion of households within the EPZ that stated they received information about what to do in a real emergency at the Artificial Island Nuclear Generating Station. Of these 304 households, 69.7% (212) responded that they had received the information, 27.7% (84) responded that they had not received the information, and 2.6% (8) did not know whether they had received the information. Using the approach discussed previously, the following estimates for the entire EPZ population resulted (at the 95% confidence interval):

- Between 64.5% and 74.5% of the households would have reported receiving the information;

- Between 22.9% and 32.8% of the households would have responded that they had not received the information; and

- Between 1.4% and 5.0% of the households would not have known whether they had received the information.

In conclusion, no areas of the Artificial Island Nuclear Generating Stations siren system were identified as needing enhancements.

IV. FINDINGS FOR EVALUATION CRITERIA E.5, F.1, N.2, N.3, AND N.5

Those aspects of the alert and notification system addressing evaluation criteria E.5, F.1, N.2, N.3, and N.5 of NUREG-0654/FEMA-REP-1, Rev. 1, have been reviewed by FEMA Regions II and III as documented in correspondence from the Regional Offices to FEMA Headquarters. These evaluation criteria have also been evaluated in offsite radiological emergency preparedness exercises for the State of Delaware, the State of New Jersey, and local jurisdictions, which are listed on pages 5 and 6 of this report. In addition, the offsite plans and preparedness site-specific to the State of Delaware were reviewed by FEMA and found to be adequate pursuant to Title 44 CFR, Part 350, to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. This was documented in letters to: the Honorable Pierre S. DuPont IV, Governor of Delaware signed by Julius W. Becton, Jr., Director, FEMA, dated June 5, 1986[16] and Victor Stello, Jr., Acting Executive Director for Operations, U.S. Nuclear Regulatory Commission, signed by Samuel W. Speck, Associate Director, State and Local Programs and Support, FEMA, dated June 5, 1986.[17] In these letters the Title 44 CFR, Part 350 approval was conditioned upon ultimate verification of the adequacy of the Artificial Island Nuclear Generating Stations alert and notification system.

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3. Federal Emergency Management Agency. 1983. "Post exercise assessment, October 13, 1982 exercise of the radiological response plans of the states of New Jersey and Delaware and county and local jurisdictions affected by the Salem Nuclear Generating Station." May 13, 1983.

4. Federal Emergency Management Agency. 1984. "Post exercise assessment, October 26, 1983 exercise of the radiological emergency response plans of the state of New Jersey, Salem County and six localities, and Cumberland County and two localities for Public Service Electric and Gas Company's Salem Nuclear Generating Station." Revision 2. March 12, 1984.

5. Federal Emergency Management Agency. 1983. "Exercise evaluation report, Salem Generating Station, Lower Alloways Township, Salem County, New Jersey, October 26, 1983." November 25, 1983.

6. Federal Emergency Management Agency. 1985. "Post exercise assessment, October 23, 1984, exercise of the radiological emergency response plans of the state of New Jersey, Salem County, and six localities, and Cumberland County and two localities for Public Service Electric and Gas Company's Salem Nuclear Generating Station." February 19, 1985.

7. Federal Emergency Management Agency. 1986. Memorandum From: Philip H. McIntire, Chief, Natural and Technological Hazards Division, Region II, For: Robert S. Wilkerson, Chief, Technological Hazards Division, Federal Emergency Management Agency, Subject: Preliminary review of the alert and notification system for the Artificial Island Nuclear Generating Stations, Dated October 30, 1986 enclosing, "Exercise evaluation report, Artificial Island Generating Stations (consisting of Salem and Hope Creek reactors), Lower Alloways Township, Salem County, New Jersey, October 29, 1985, Remedial Date November 15, 1985." January 15, 1986.

8. Nuclear Regulatory Commission and Federal Emergency Management Agency. 1980. "Criteria for preparation and evaluation of radiological emergency response plans and

preparedness in support of nuclear power plants." NUREG-0654/FEMA-REP-1. Revision 1. November 1980.

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14. Federal Emergency Management Agency. 1987. Memorandum From: Ihor W. Husar, Chairman, Regional Assistance Committee, Region II, For: Craig S. Wingo, Chief, Field Operations Branch, Federal Emergency Management Agency, Subject: Final draft report on the alert and notification system for the Artificial Island Nuclear Generating Stations. September 22, 1987.

15. Federal Emergency Management Agency. 1987. Memorandum From: Ihor W. Husar, Chairman, Regional Assistance Committee, Region II, For: Craig S. Wingo, Chief, Field Operations Branch, Federal Emergency Management Agency, Subject: Additional comments on the final draft report of the alert and notification system for the Artificial Island Nuclear Generating Stations. November 5, 1987.

16. Federal Emergency Management Agency. 1986. Letter to the Honorable Pierre S. Dupont IV, Governor of Delaware, signed by Julius W. Becton, Jr., Director. June 5, 1986.

17. Federal Emergency Management Agency. 1986. Letter to Victor Stello, Jr., Acting Executive Director for Operations, U.S. Nuclear Regulatory Commission, signed by Samuel W. Speck, Associate Director, State and Local Programs and Support. June 5, 1986.

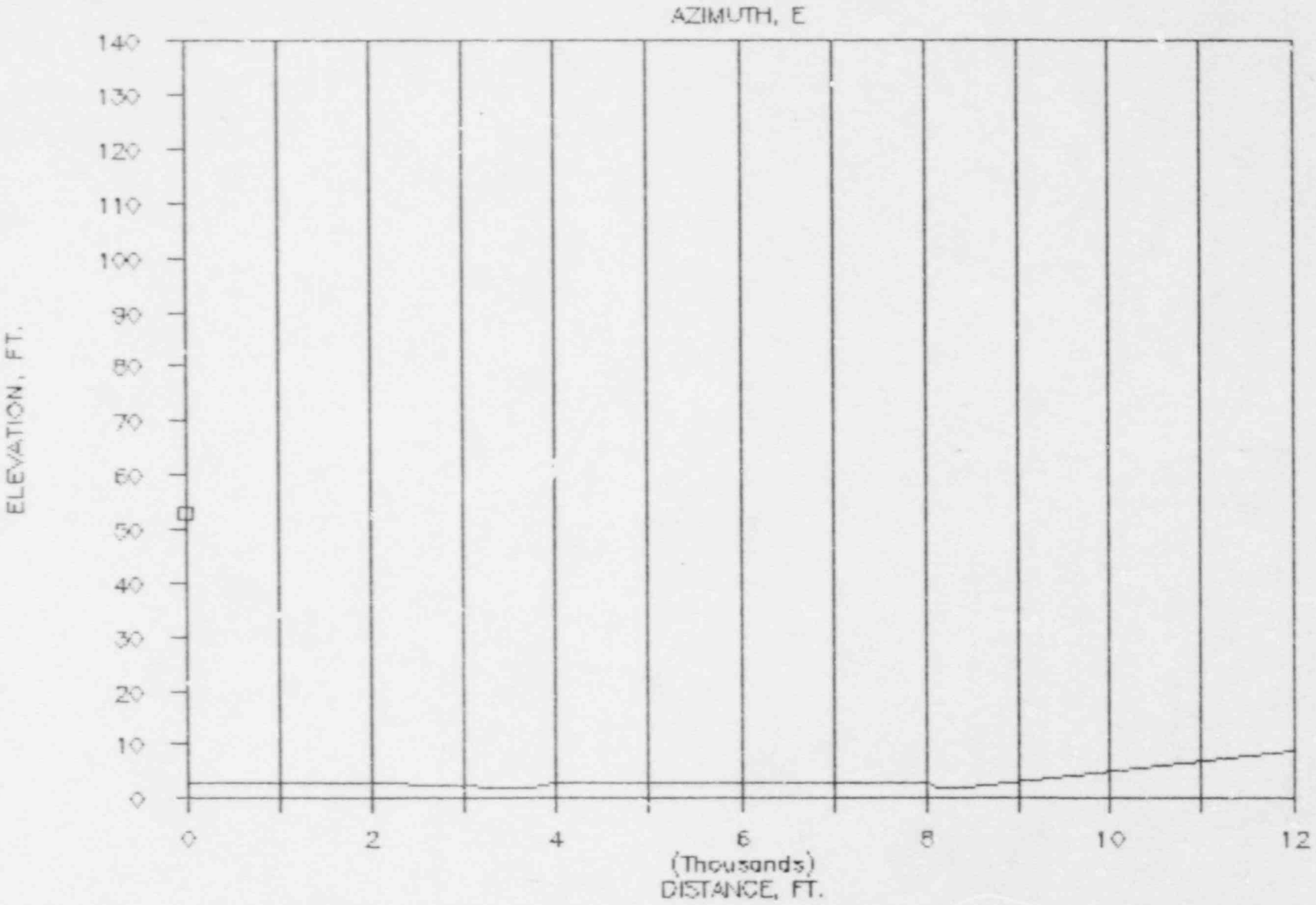
18. Federal Emergency Management Agency. 1986. Memorandum From: Philip H. McIntire, Chief, Natural Technological Hazards Division, Region II, For: Robert S. Wilkerson, Chief, Technological Hazards Division, Federal Emergency Management Agency, Subject: Preliminary review of the alert and notification system for the Artificial Island Nuclear Generating Stations. October 30, 1986.

19. Federal Emergency Management Agency. 1987. Memorandum From: Paul P. Giordano, Regional Director, Region III, For: Richard W. Krimm, Assistant Associate Director, Office of Natural and Technological Hazards s, Federal Emergency Management Agency, Subject: Evaluation report for the November 12, 1986 Artificial Island Alert and Notification Demonstration. January 21, 1987 enclosing, "Exercise evaluation report, Artificial Island Generating Station, November 12, 1986." January 16, 1987.

APPENDIX A

OSPM Siren Topographical Profile Charts
OSPM Siren Topographical Input Data
OSPM Siren Sound Pressure Level Input Data
OSPM Siren Meteorological Input Data
OSPM Siren Sound Pressure Level Output Data

ARTIFICIAL ISLAND 101



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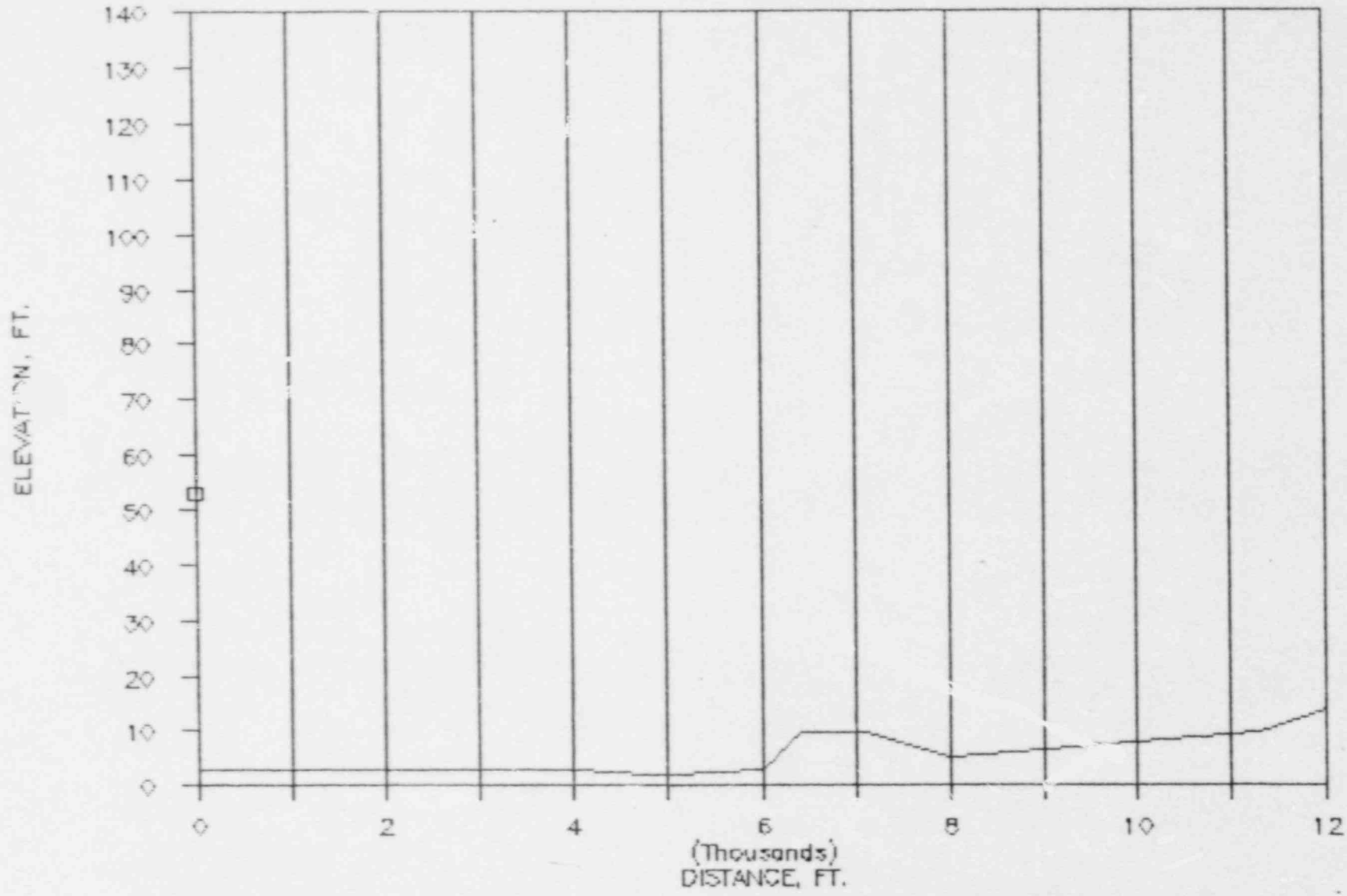

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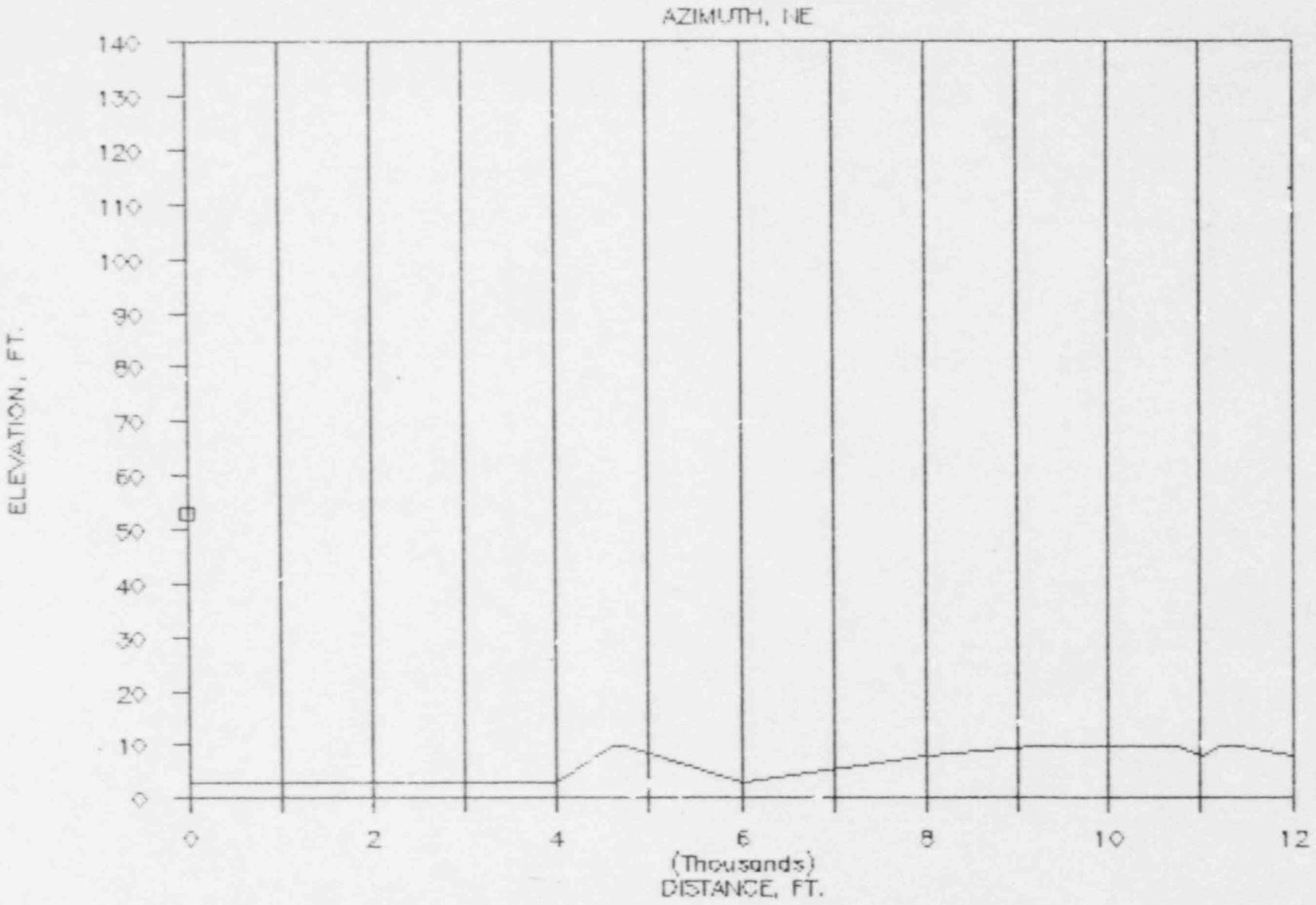

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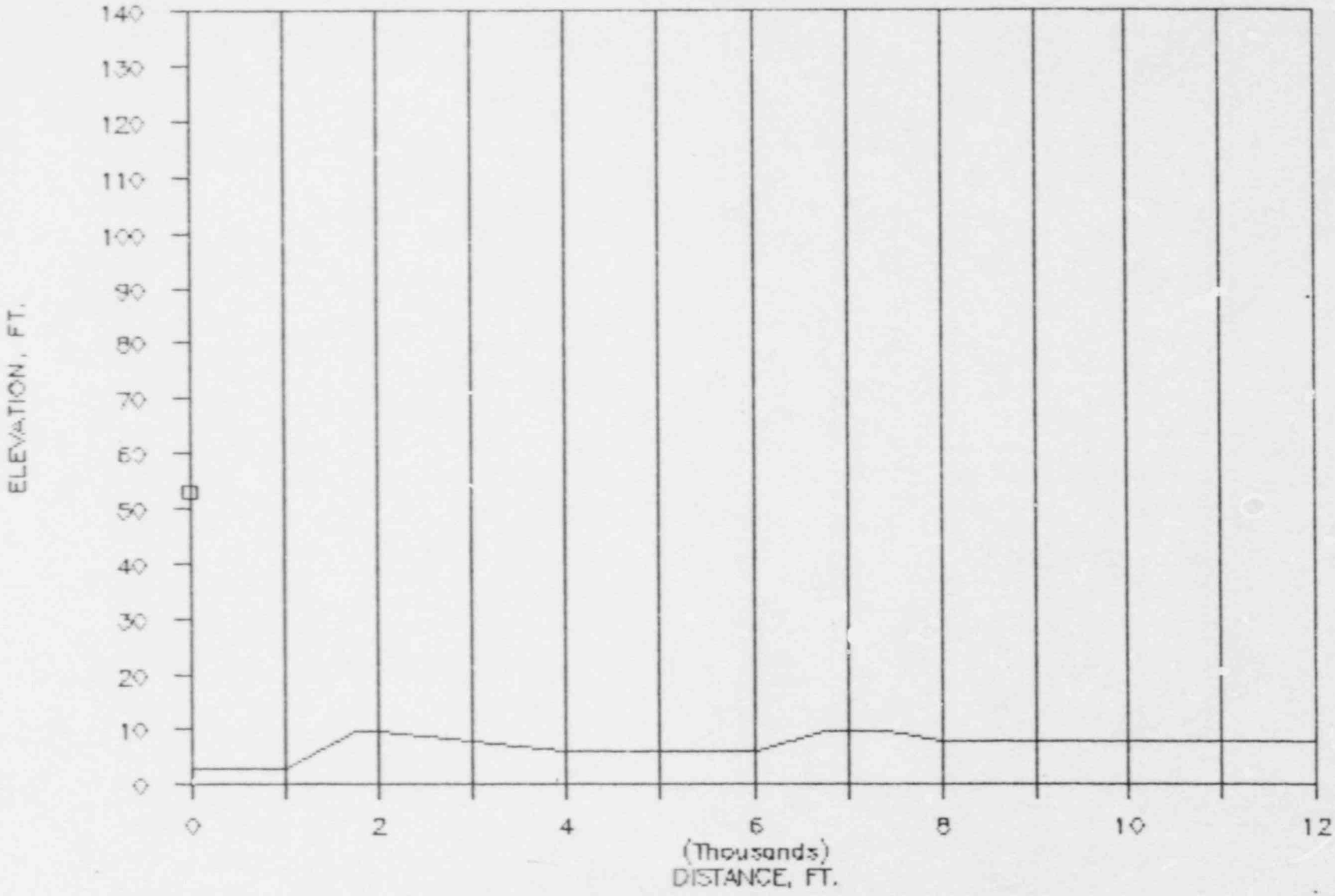

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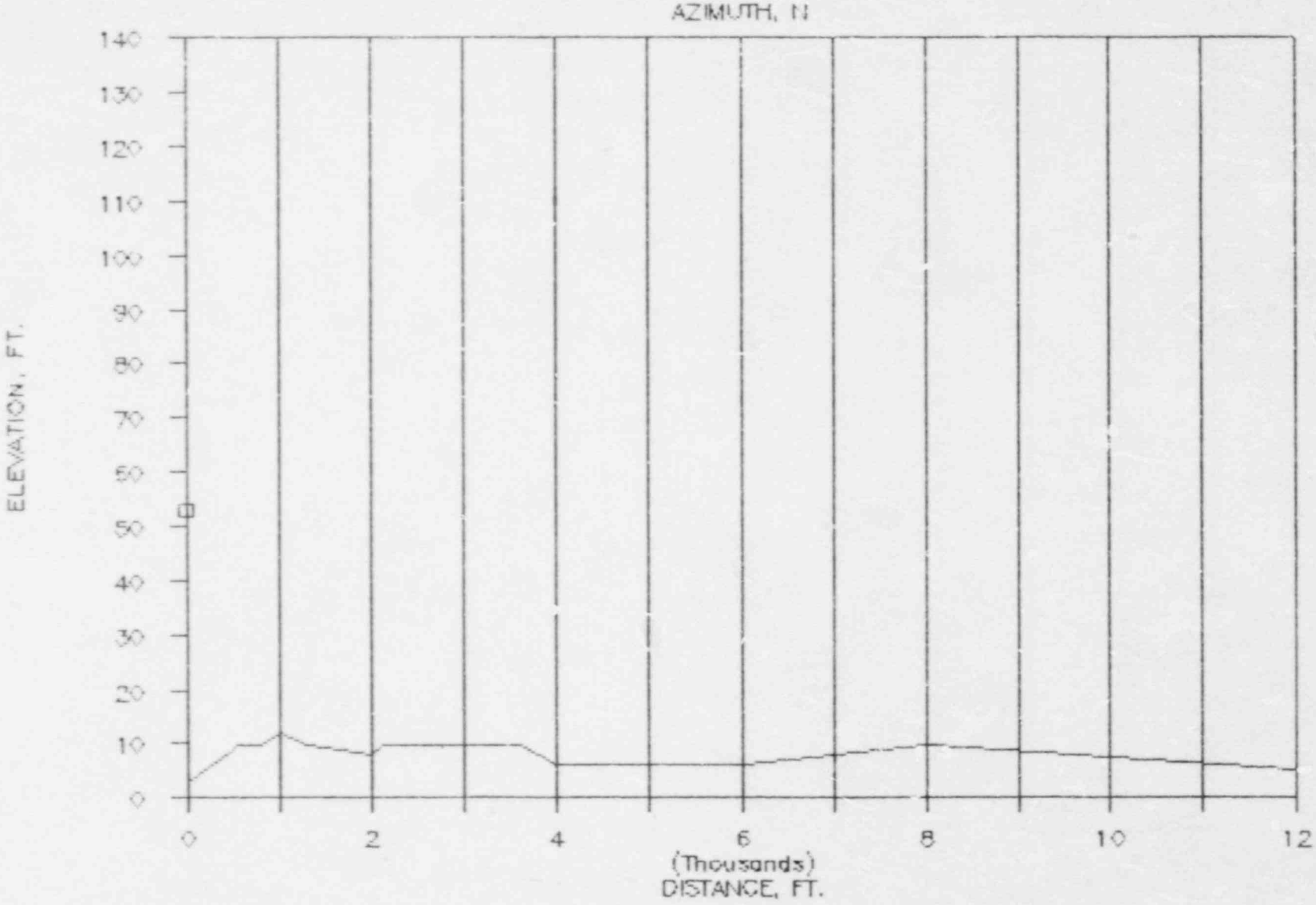

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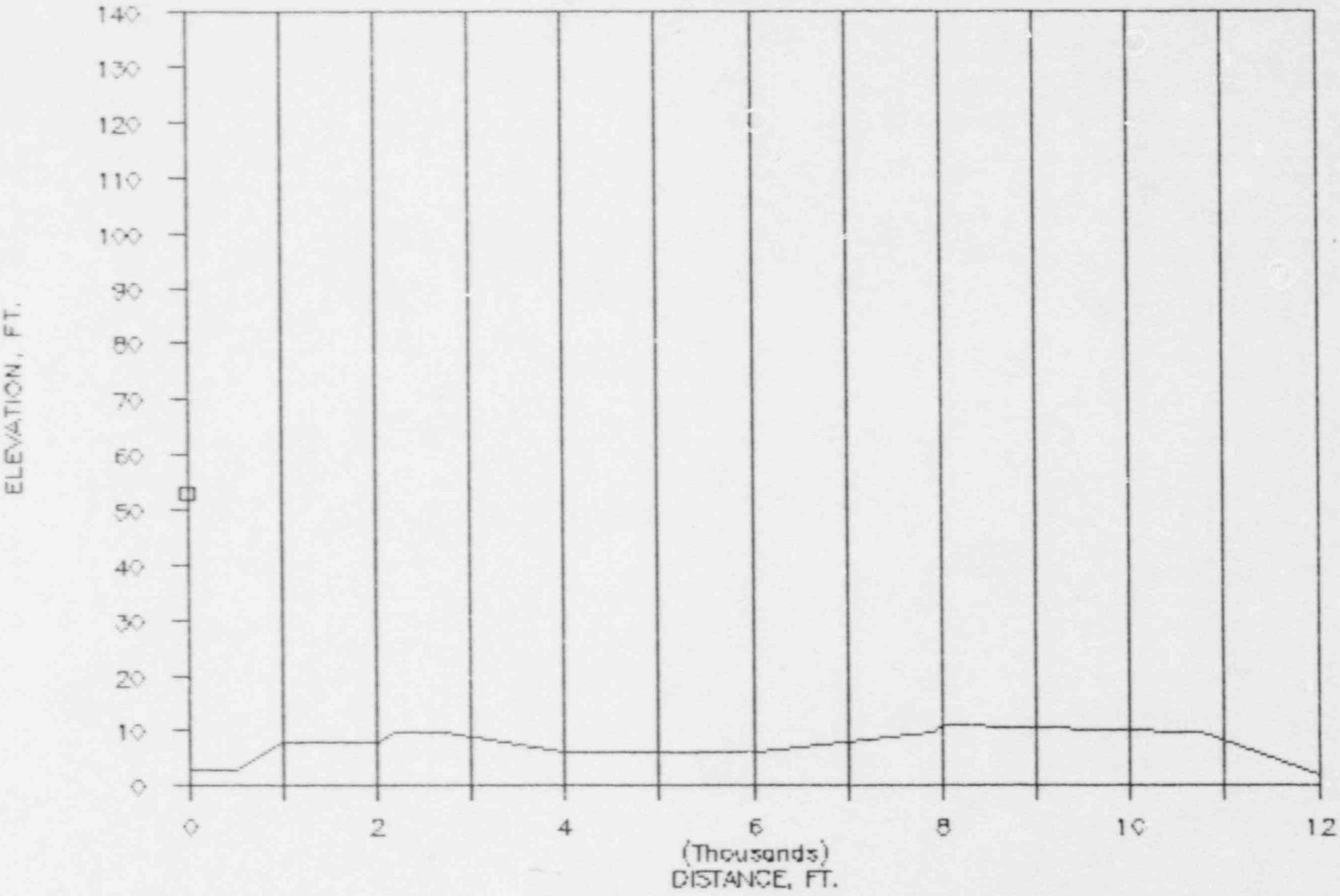

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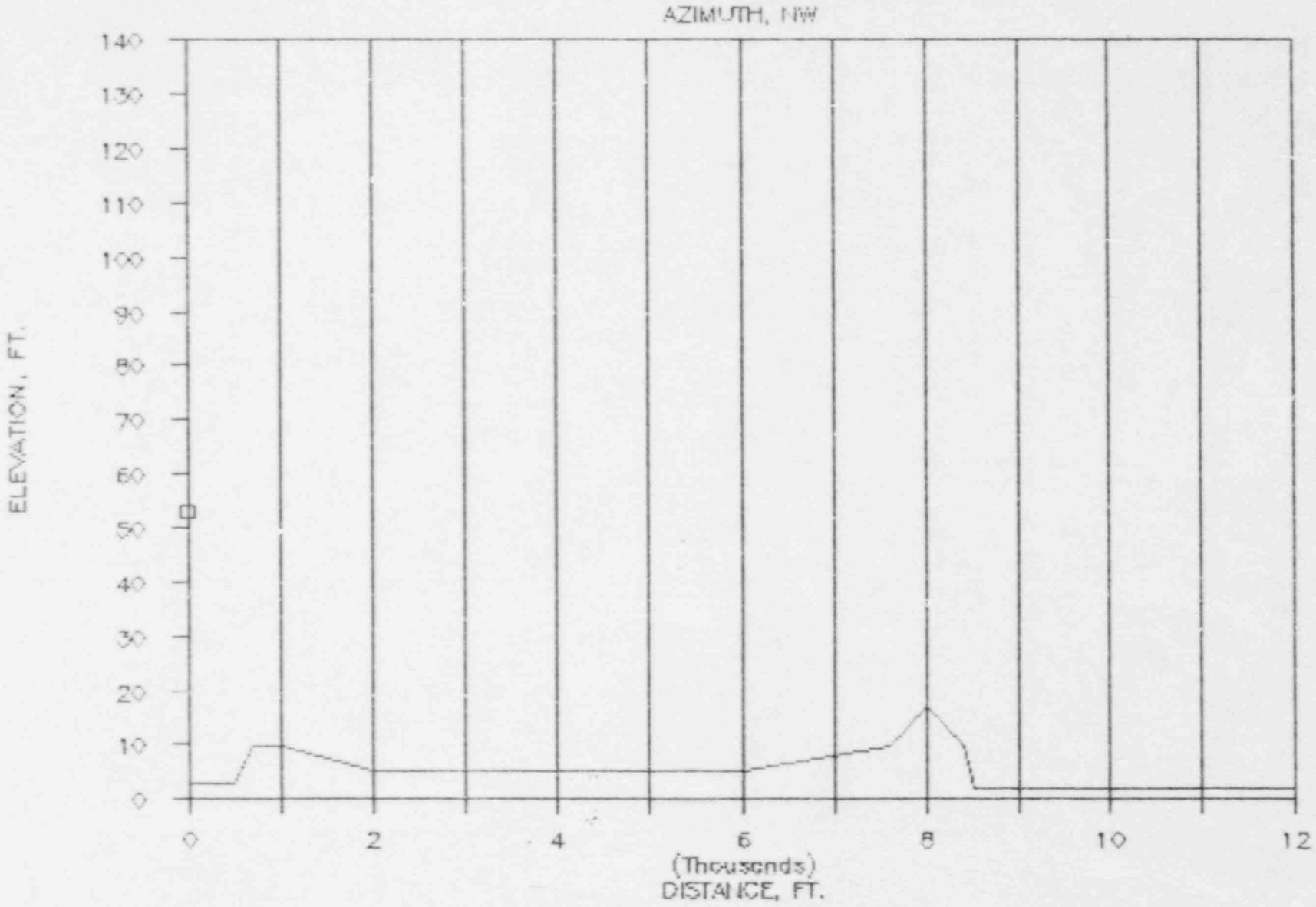

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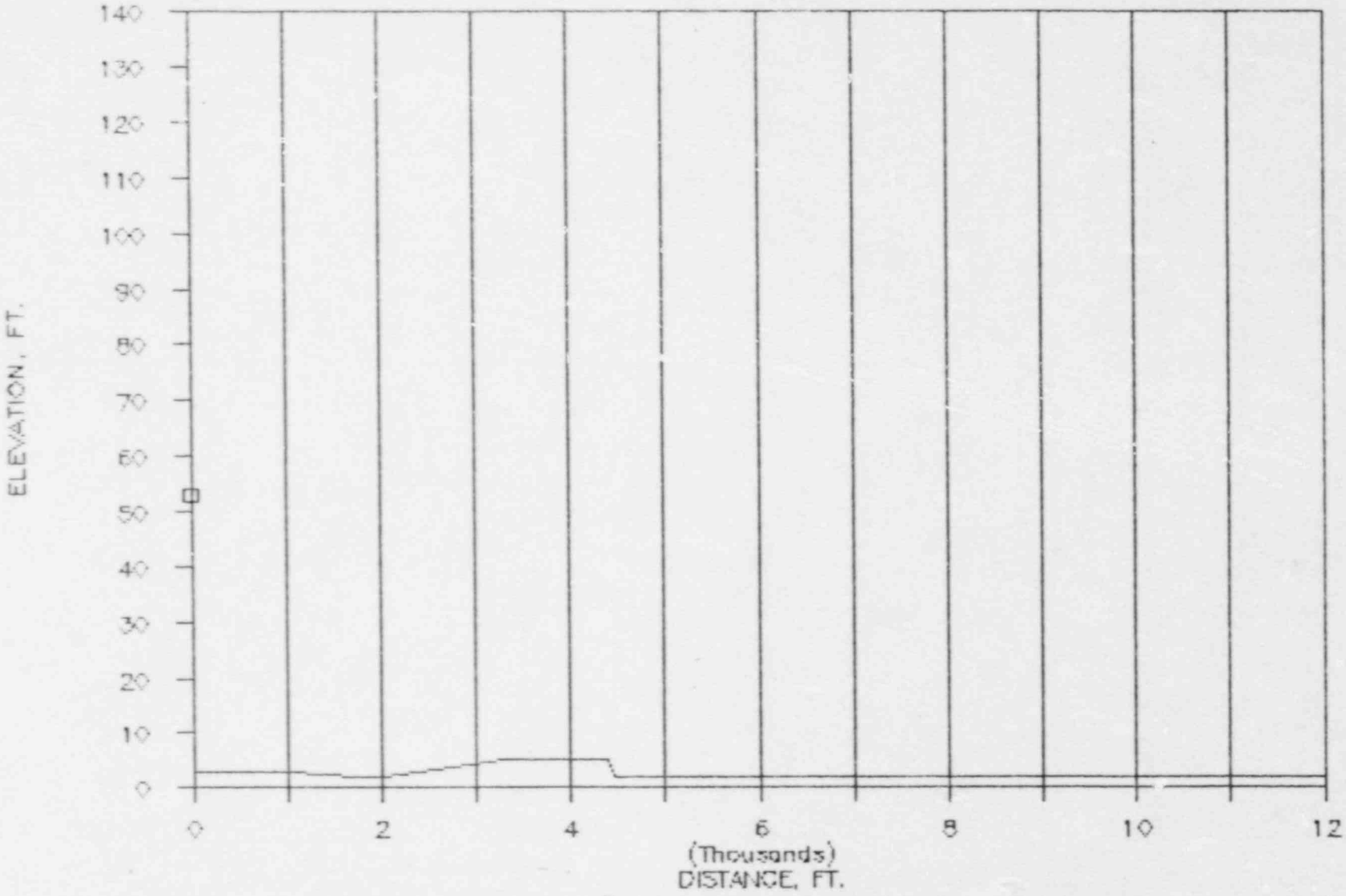

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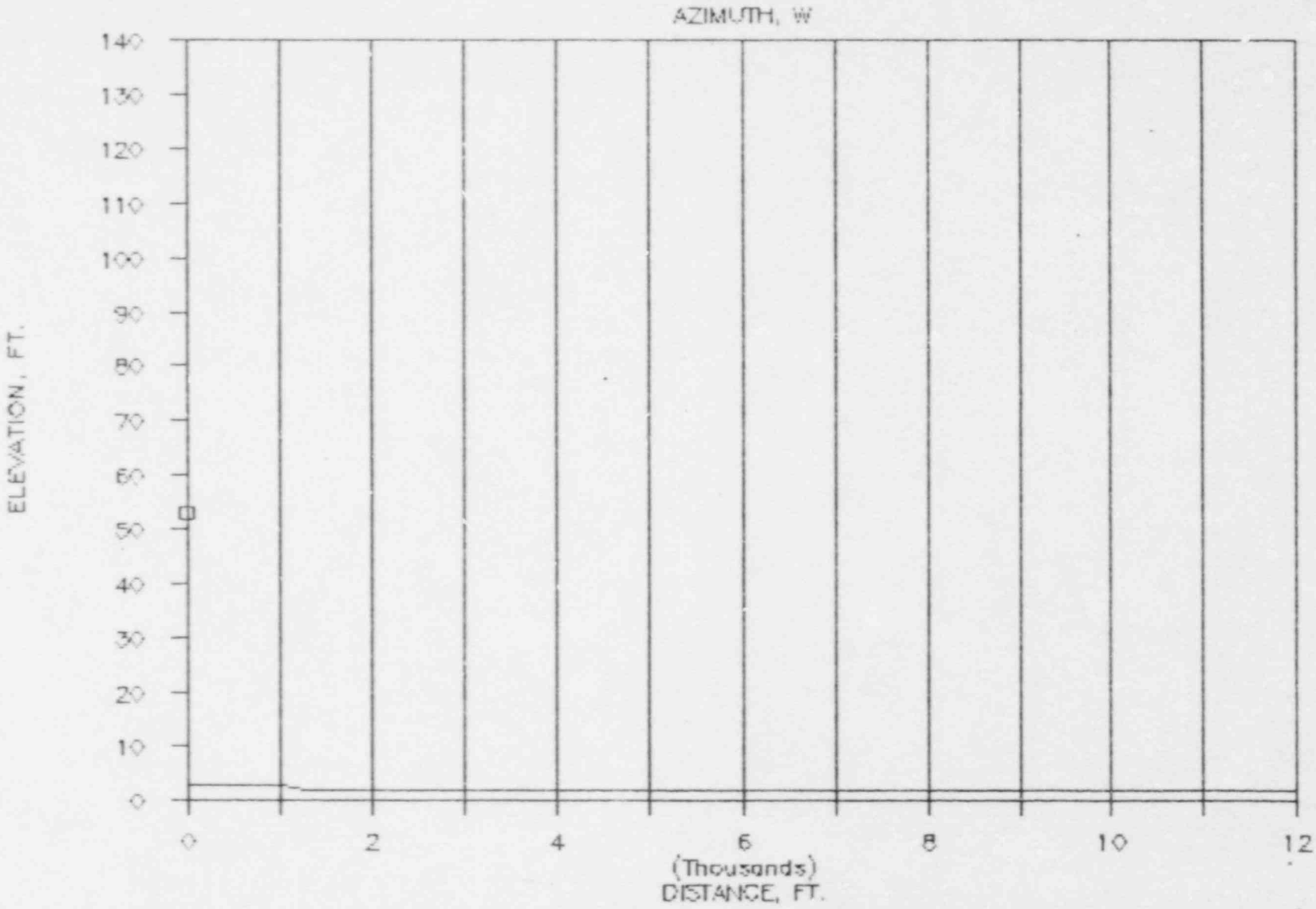

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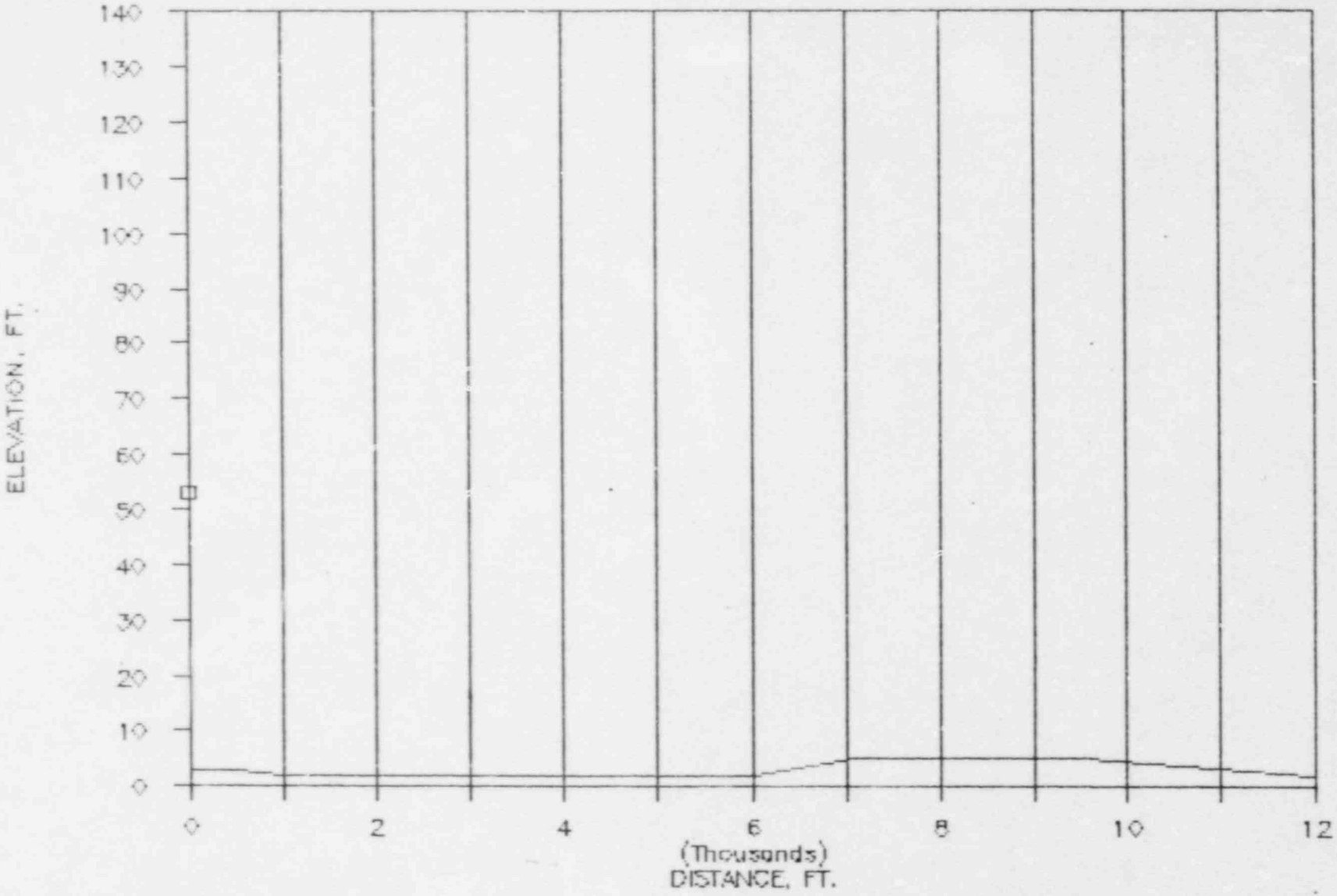

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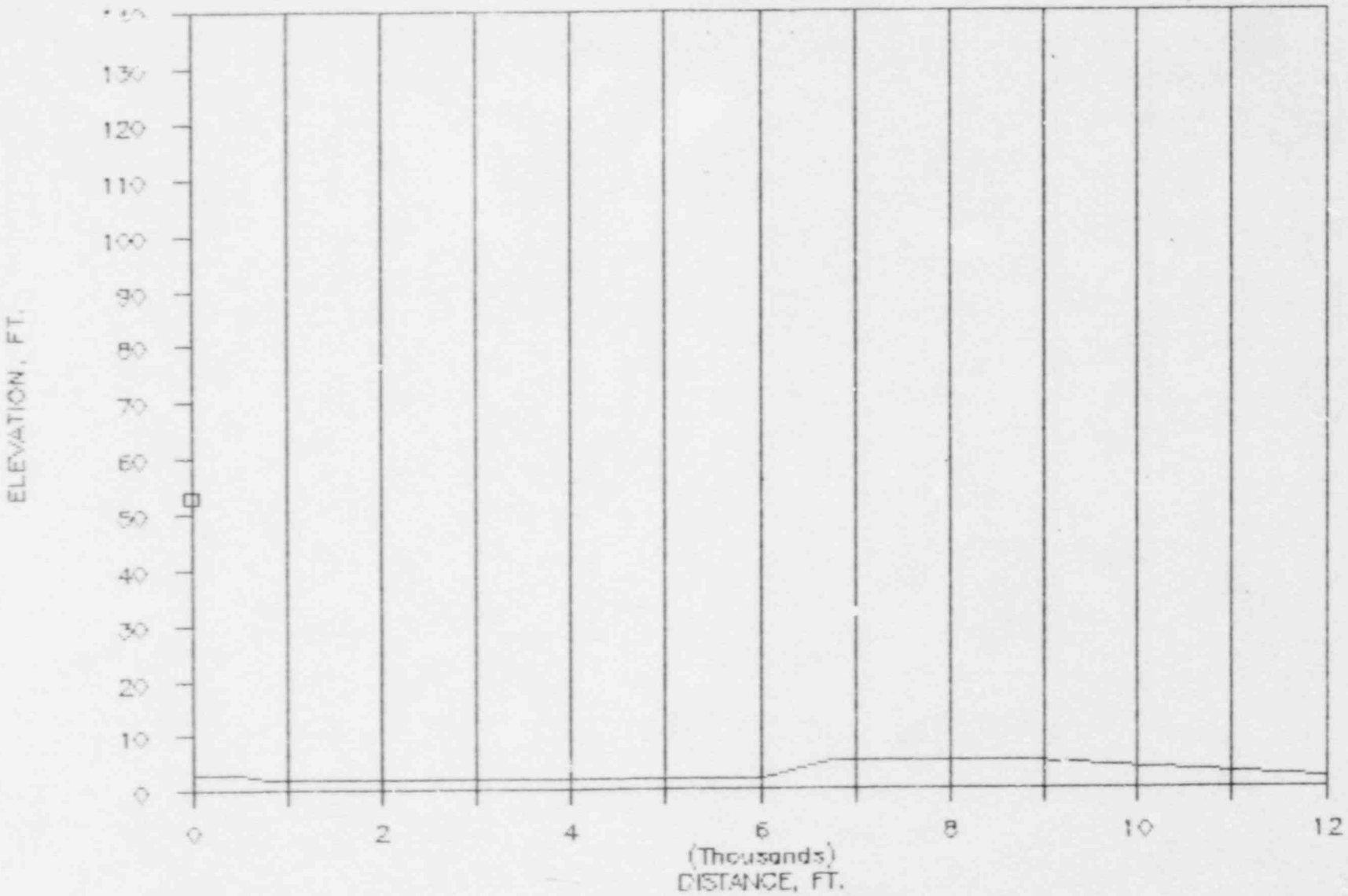

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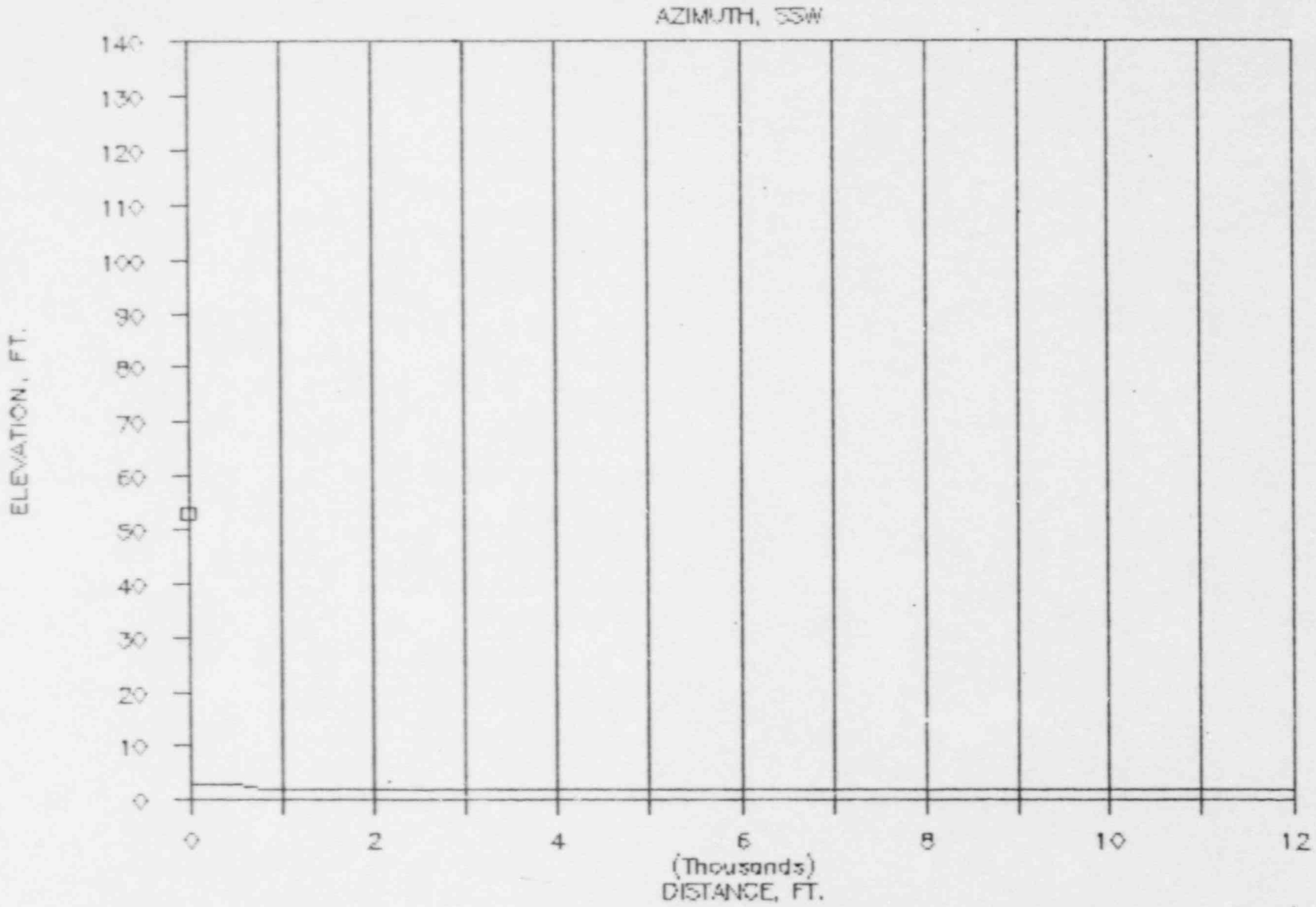

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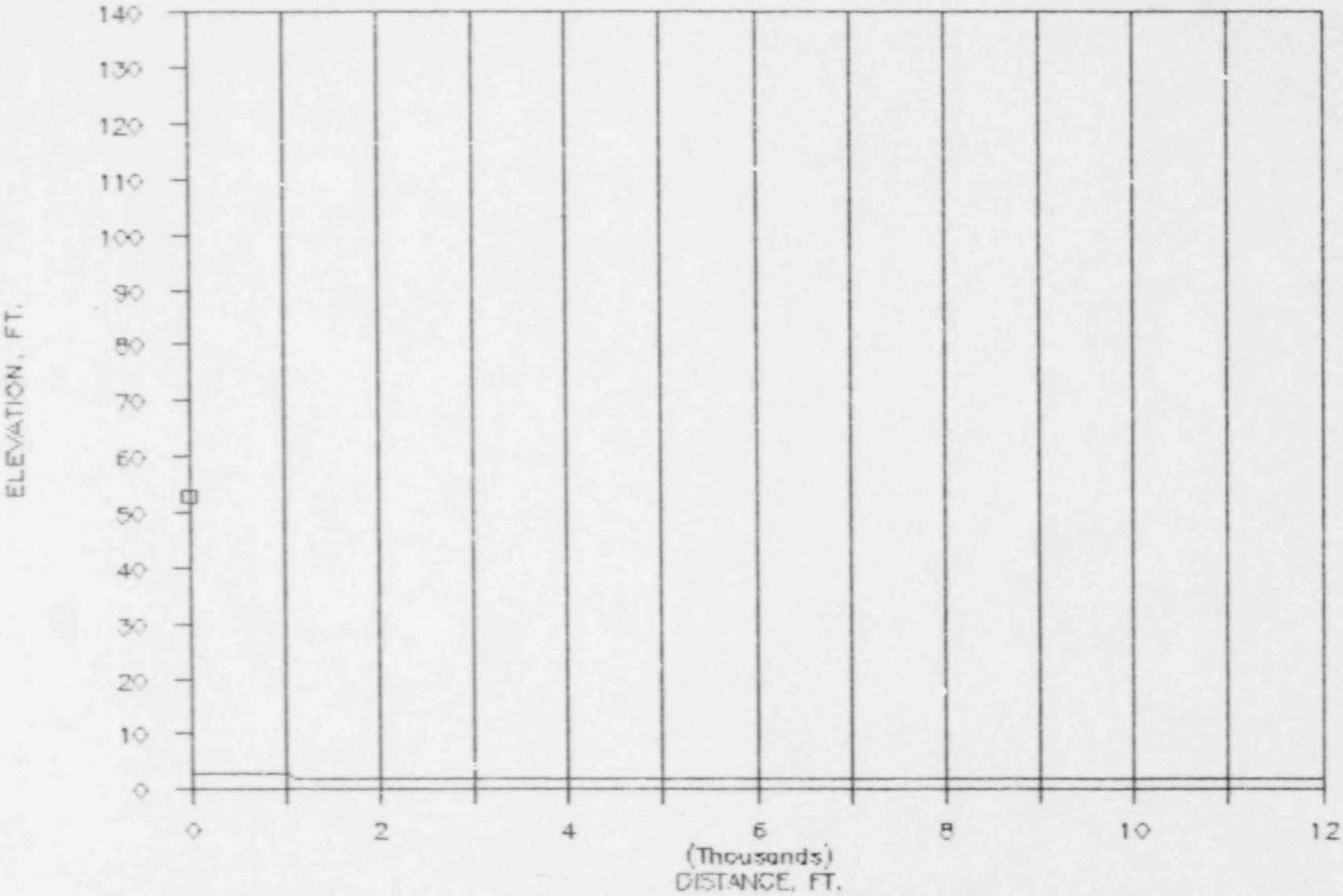

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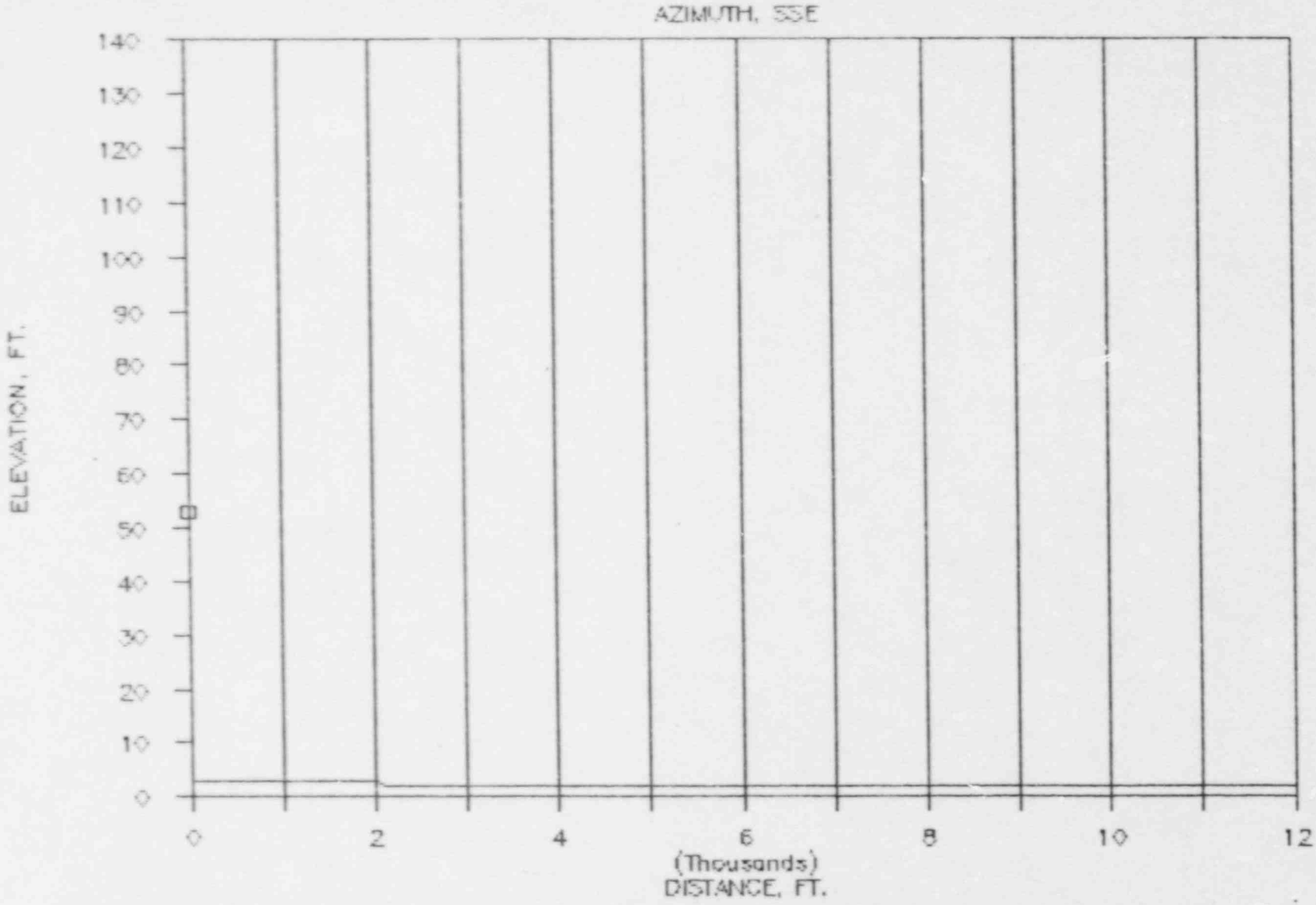

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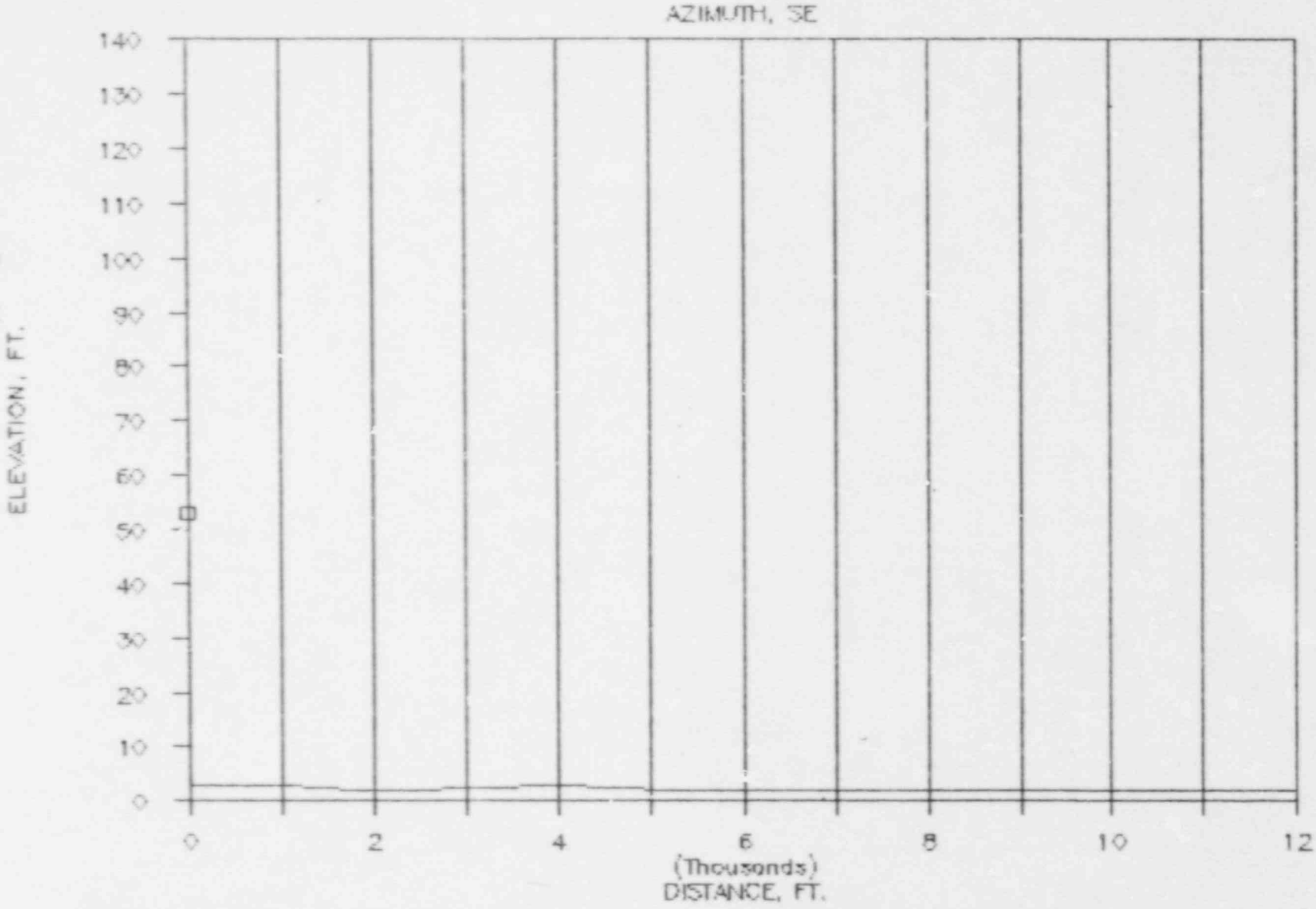

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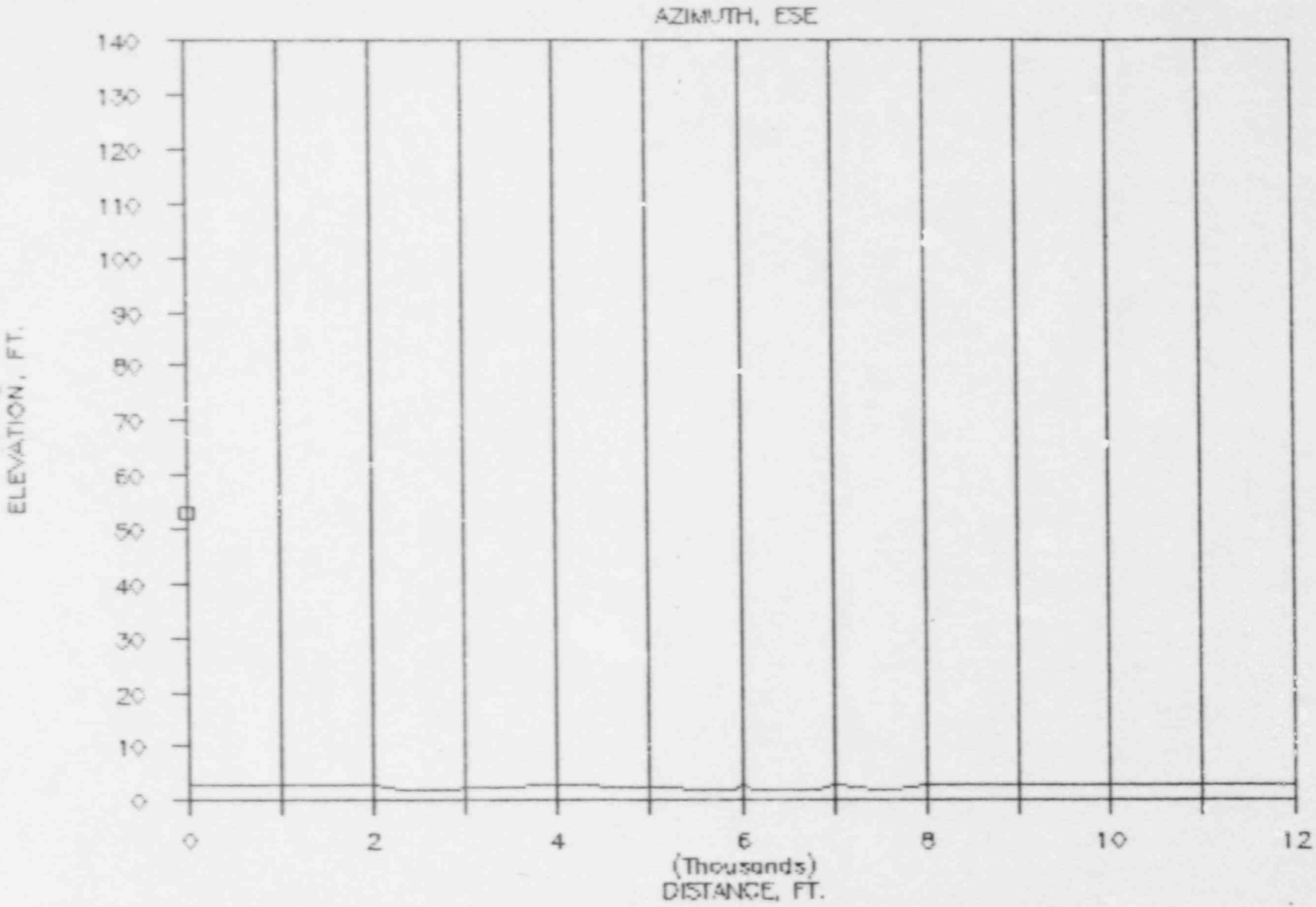


PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #101-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	3.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	3.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	3.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	3.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	3.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	3.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	9.00	SOFT	0.	NO		0.
8	500.	67.50	3.00	SOFT	0.	NO		0.
9	1000.	67.50	3.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	3.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	3.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	3.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	5.00	SOFT	0.	NO	0.	0.
14	12000.	67.50	14.00	SOFT	0.	NO	0.	0.
15	500.	45.00	3.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	3.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	3.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	3.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	3.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	8.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	8.00	SOFT	0.	NO	0.	0.
22	500.	22.50	3.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	3.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	10.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	6.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	10.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	8.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	8.00	SOFT	0.	NO	0.	0.
29	500.	.00	9.00	SOFT	0.	NO	0.	0.
30	1000.	.00	12.00	SOFT	0.	NO	0.	0.
31	2000.	.00	8.00	SOFT	0.	NO	0.	0.
32	4000.	.00	6.00	SOFT	0.	NO	0.	0.
33	6000.	.00	6.00	SOFT	0.	NO	0.	0.
34	8000.	.00	10.00	SOFT	0.	NO	0.	0.
35	12000.	.00	5.00	SOFT	0.	NO	0.	0.
36	500.	337.50	3.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	8.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	8.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	6.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	6.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	11.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	2.00	SOFT	0.	NO	0.	0.
43	500.	315.00	3.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	10.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	5.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	5.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	5.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	17.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	2.00	SOFT	0.	NO	0.	0.
50	500.	292.50	3.00	HARD	0.	NO	0.	0.
51	1000.	292.50	3.00	HARD	0.	NO	0.	0.
52	2000.	292.50	2.00	HARD	0.	NO	0.	0.
53	4000.	292.50	5.00	HARD	0.	NO	0.	0.
54	6000.	292.50	2.00	HARD	0.	NO	0.	0.
55	8000.	292.50	2.00	HARD	0.	NO	0.	0.
56	12000.	292.50	2.00	HARD	0.	NO	0.	0.
57	500.	270.00	3.00	HARD	0.	NO	0.	0.
58	1000.	270.00	3.00	HARD	0.	NO	0.	0.
59	2000.	270.00	2.00	HARD	0.	NO	0.	0.
60	4000.	270.00	2.00	HARD	0.	NO	0.	0.
61	6000.	270.00	2.00	HARD	0.	NO	0.	0.
62	8000.	270.00	2.00	HARD	0.	NO	0.	0.
63	12000.	270.00	2.00	HARD	0.	NO	0.	0.
64	500.	247.50	3.00	HARD	0.	NO	0.	0.
65	1000.	247.50	2.00	HARD	0.	NO	0.	0.
66	2000.	247.50	2.00	HARD	0.	NO	0.	0.
67	4000.	247.50	2.00	HARD	0.	NO	0.	0.
68	6000.	247.50	2.00	HARD	0.	NO	0.	0.
69	8000.	247.50	5.00	HARD	0.	NO	0.	0.
70	12000.	247.50	2.00	HARD	0.	NO	0.	0.
71	500.	225.00	3.00	HARD	0.	NO	0.	0.
72	1000.	225.00	2.00	HARD	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	2.00	HARD	0.	NO	0.	0.
74	4000.	225.00	2.00	HARD	0.	NO	0.	0.
75	6000.	225.00	2.00	HARD	0.	NO	0.	0.
76	8000.	225.00	5.00	HARD	0.	NO	0.	0.
77	12000.	225.00	2.00	HARD	0.	NO	0.	0.
78	500.	202.50	3.00	HARD	0.	NO	0.	0.
79	1000.	202.50	2.00	HARD	0.	NO	0.	0.
80	2000.	202.50	2.00	HARD	0.	NO	0.	0.
81	4000.	202.50	2.00	HARD	0.	NO	0.	0.
82	6000.	202.50	2.00	HARD	0.	NO	0.	0.
83	8000.	202.50	2.00	HARD	0.	NO	0.	0.
84	12000.	202.50	2.00	HARD	0.	NO	0.	0.
85	500.	180.00	3.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	3.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	2.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	2.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	2.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	2.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	2.00	SOFT	0.	NO	0.	0.
92	500.	157.50	3.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	3.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	3.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	2.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	2.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	2.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	2.00	SOFT	0.	NO	0.	0.
99	500.	135.00	3.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	3.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	2.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	3.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	2.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	2.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	2.00	SOFT	0.	NO	0.	0.
106	500.	112.50	3.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	3.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	3.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	3.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	3.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	3.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	3.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #101-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 3.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #101-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

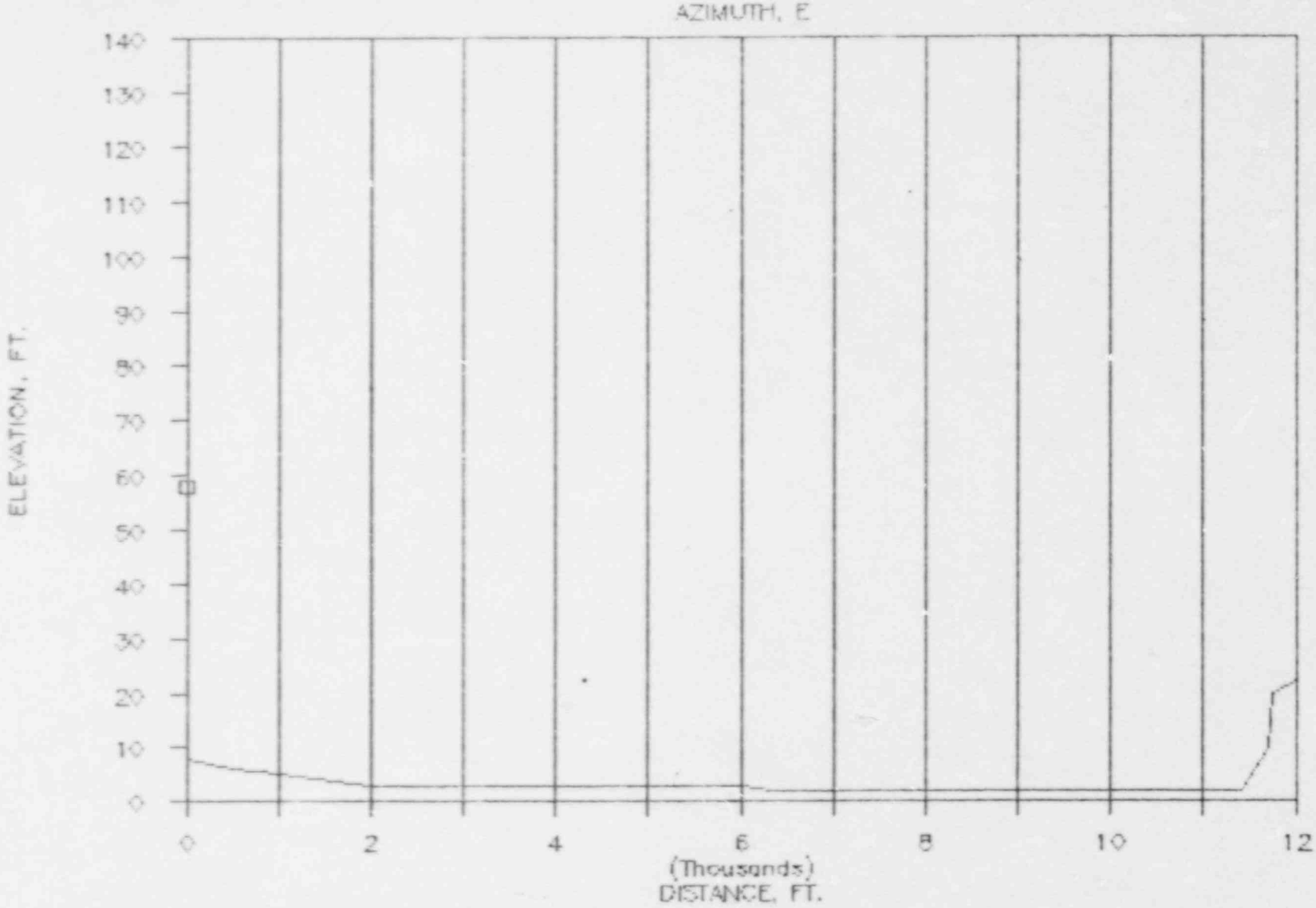
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #101-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

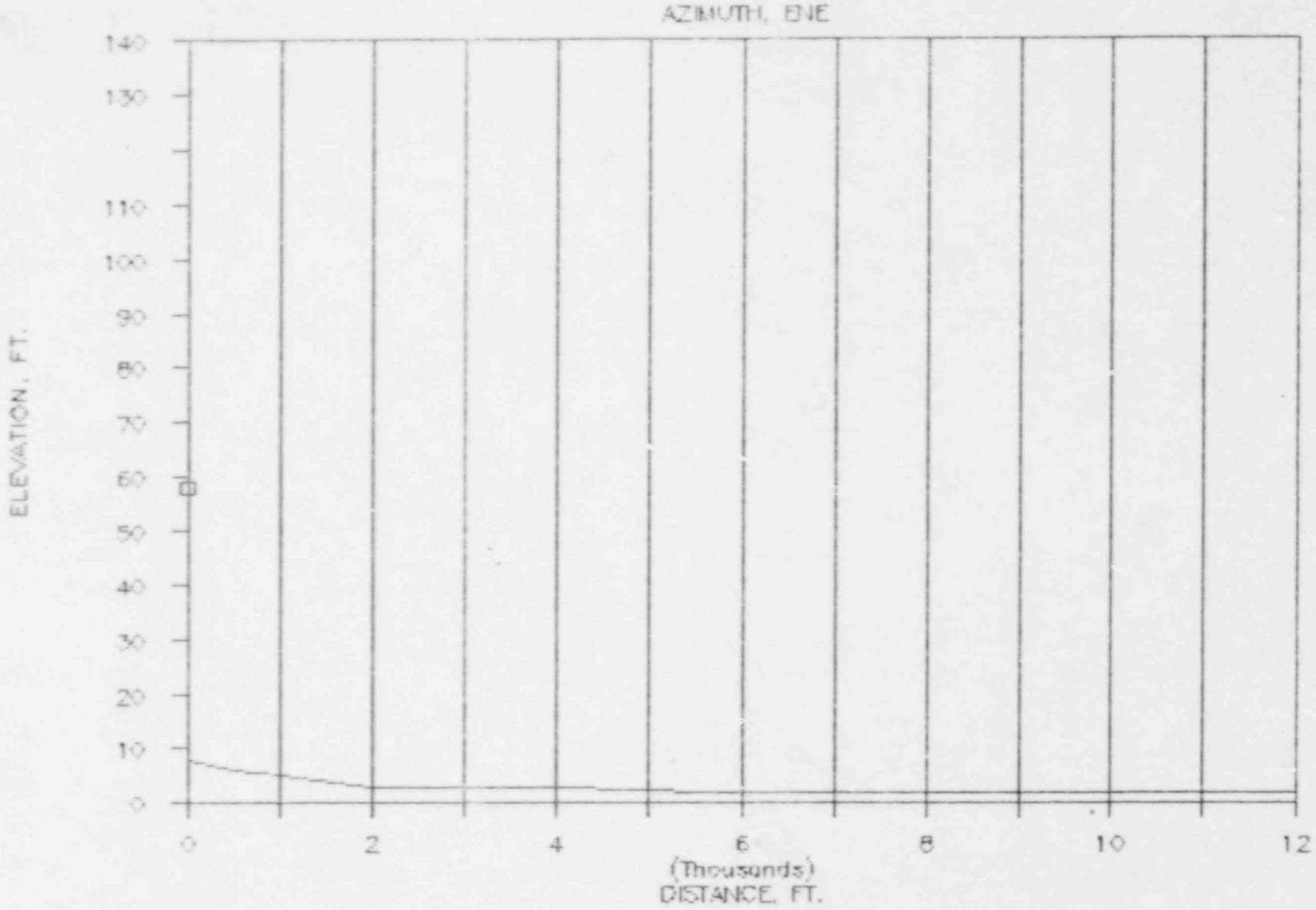
DISTANCE IN FEET

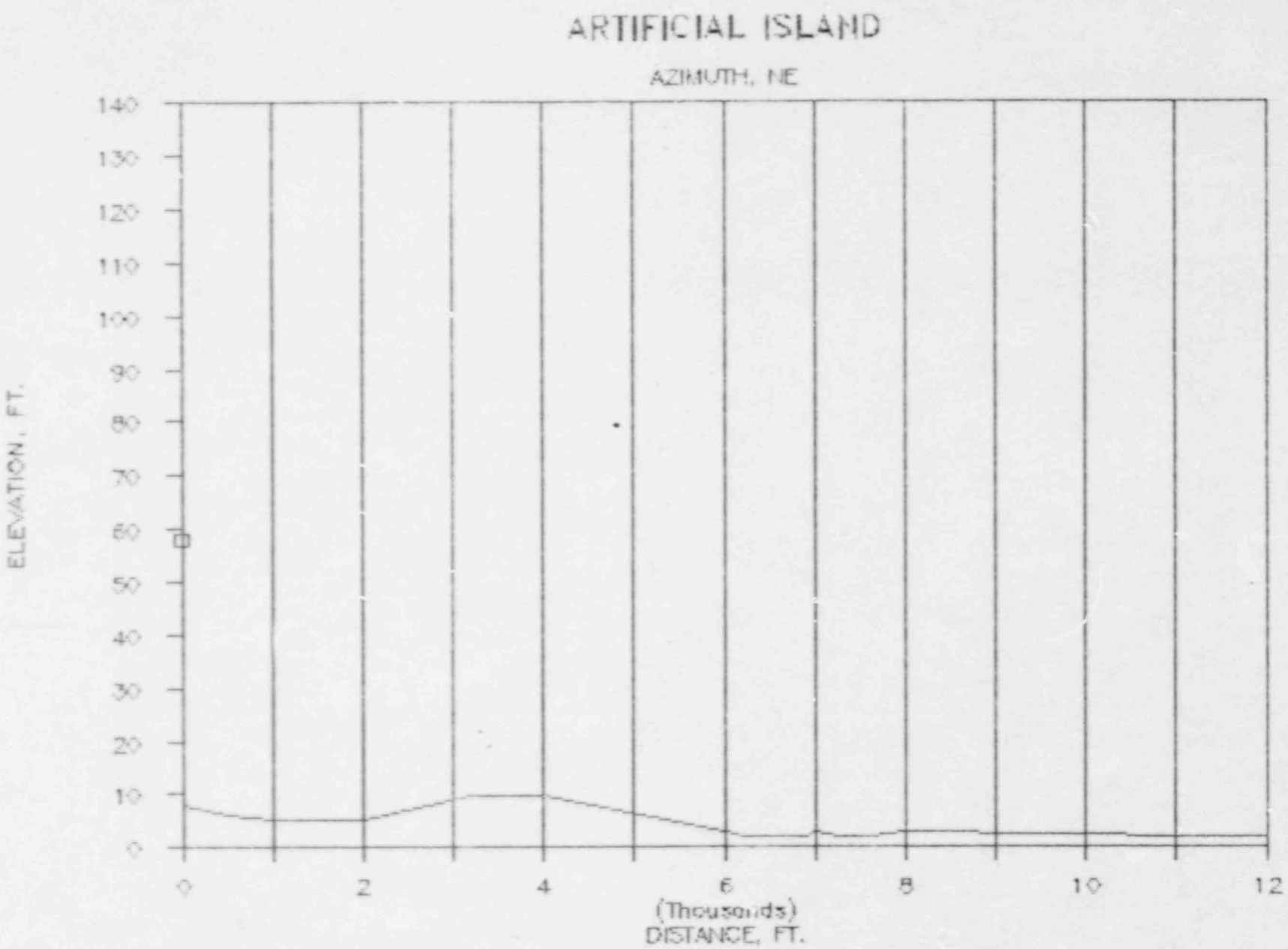
AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	72.	66.
NE	107.	97.	87.	80.	76.	72.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	108.	100.	84.	61.	50.	45.	38.
W	108.	100.	86.	63.	51.	45.	38.
WSW	108.	101.	88.	68.	52.	46.	38.
SW	108.	101.	93.	85.	80.	75.	68.
SSW	108.	101.	93.	85.	80.	75.	68.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	76.	72.	66.
ESE	107.	97.	87.	80.	76.	72.	66.

ARTIFICIAL ISLAND 102

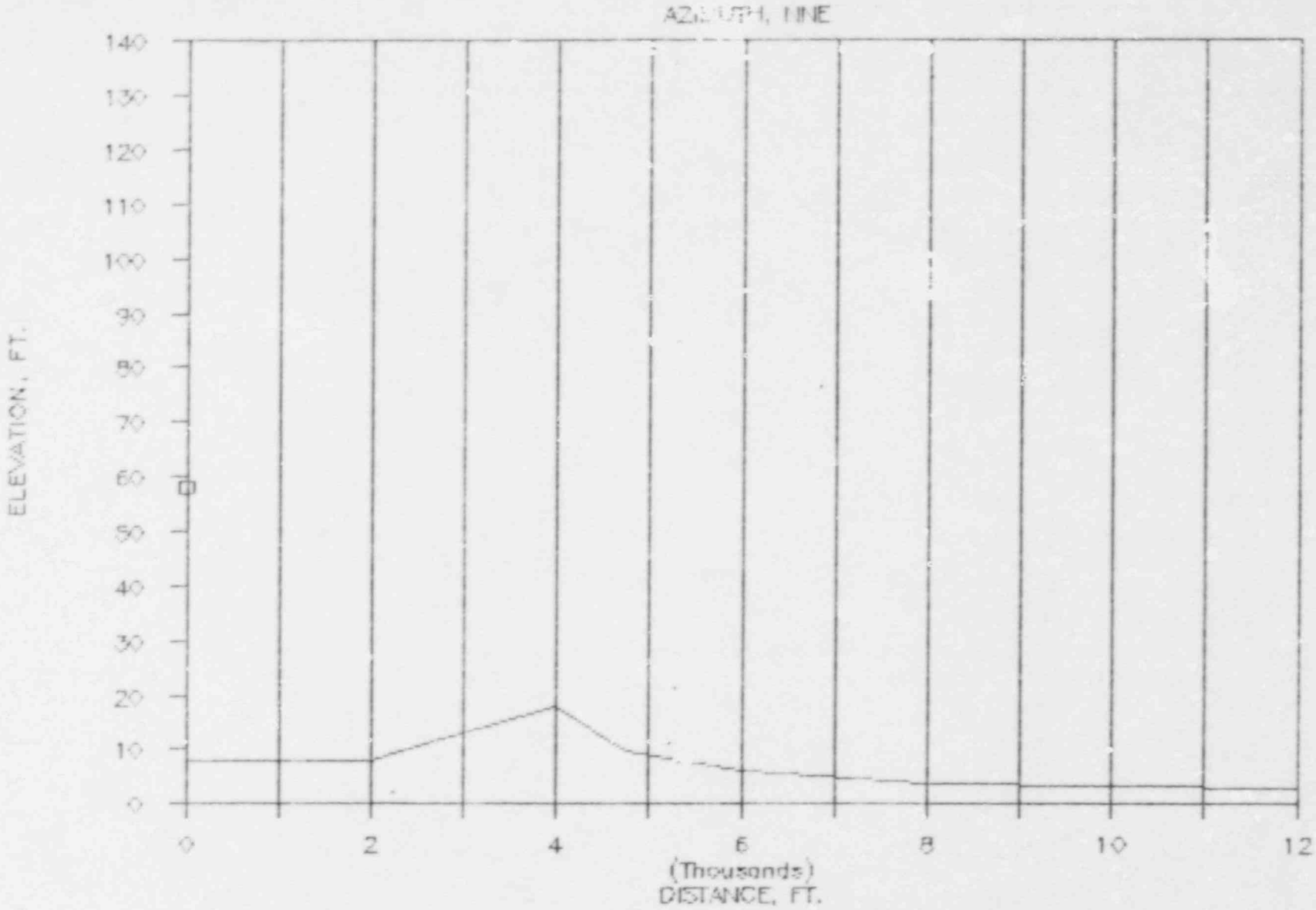


ARTIFICIAL ISLAND 102




ARTIFICIAL ISLAND
AZIMUTH, NE
ELEVATION, FT.
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
(Thousands)
DISTANCE, FT.

ARTIFICIAL ISLAND 102



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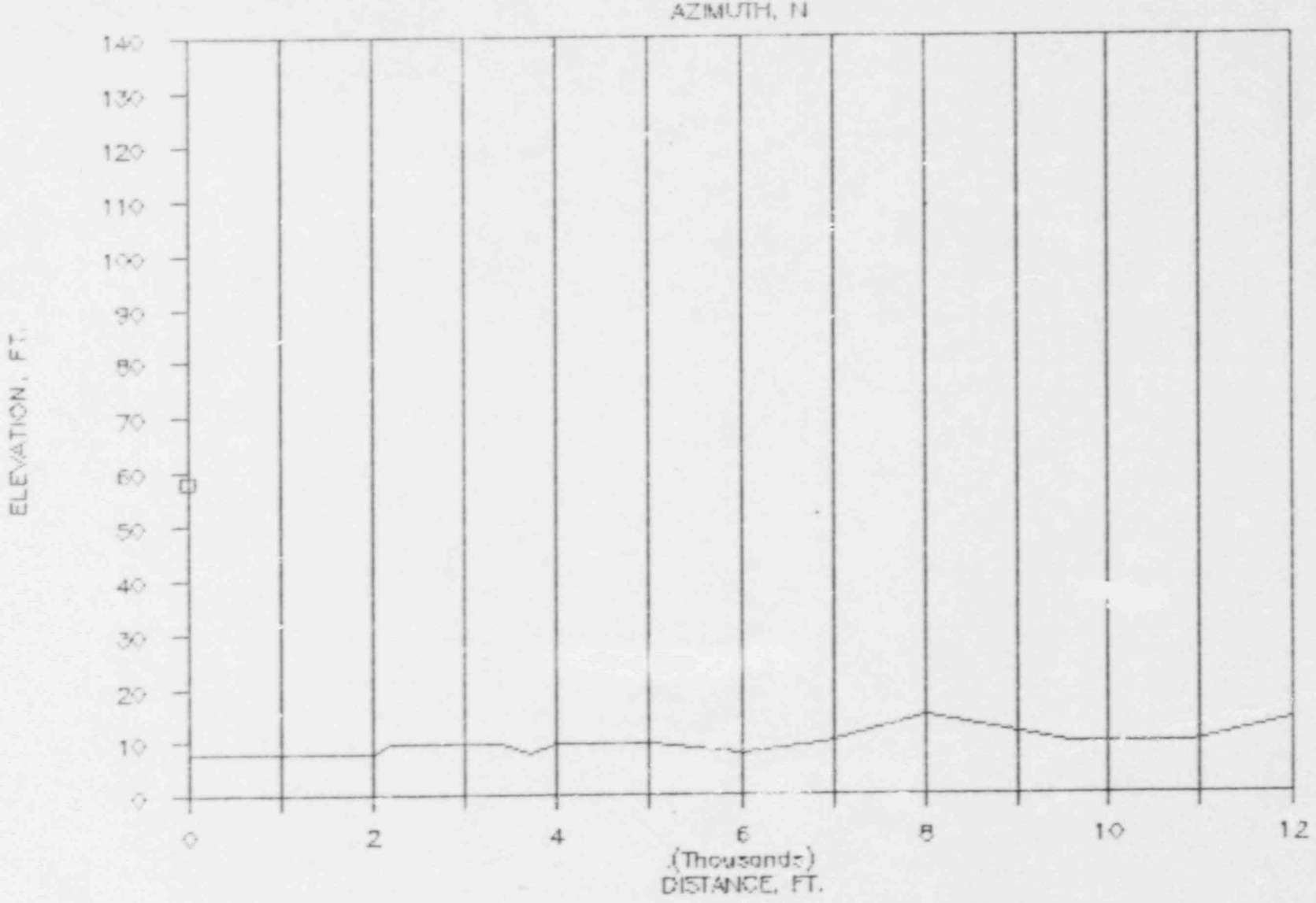

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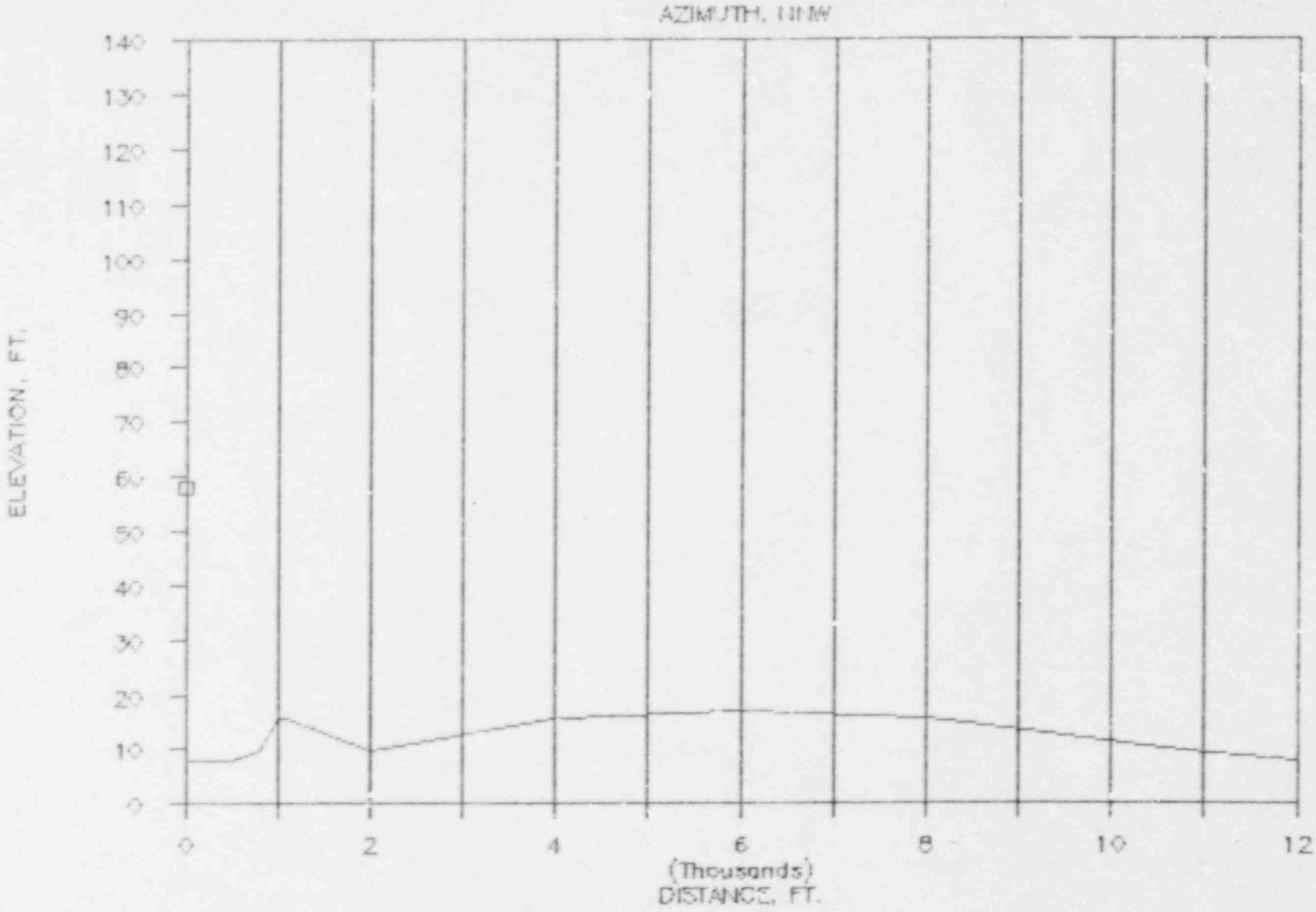

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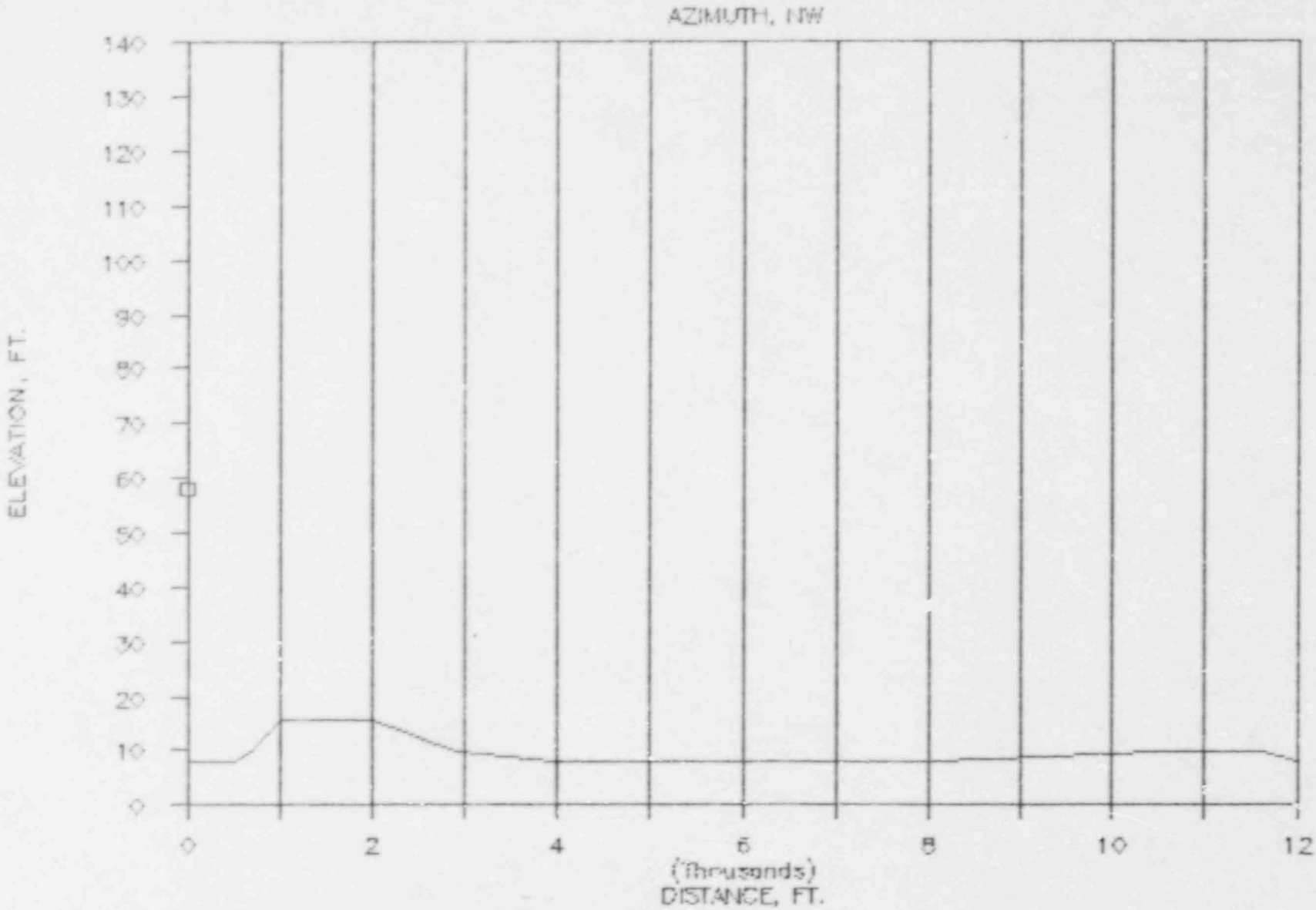

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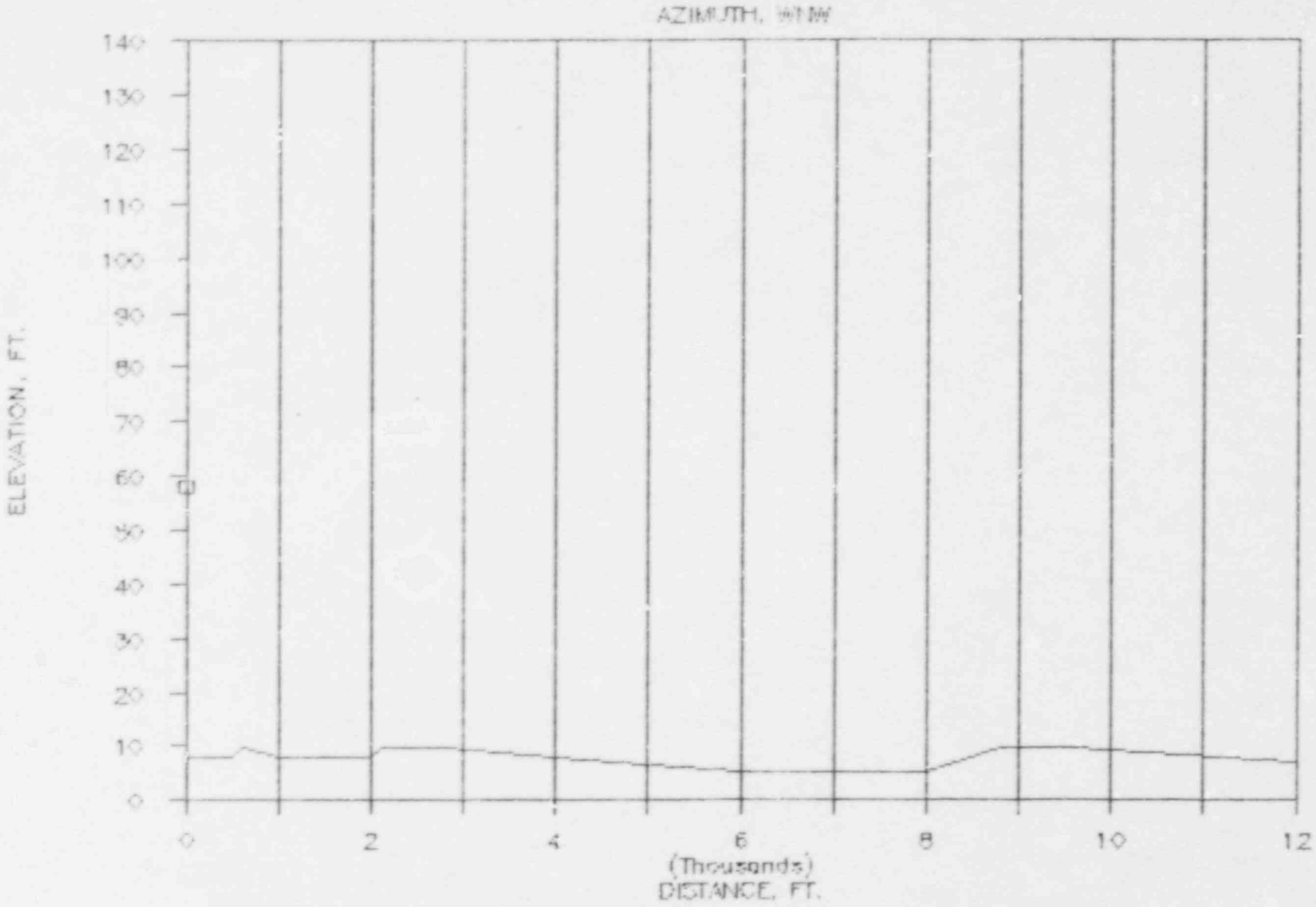

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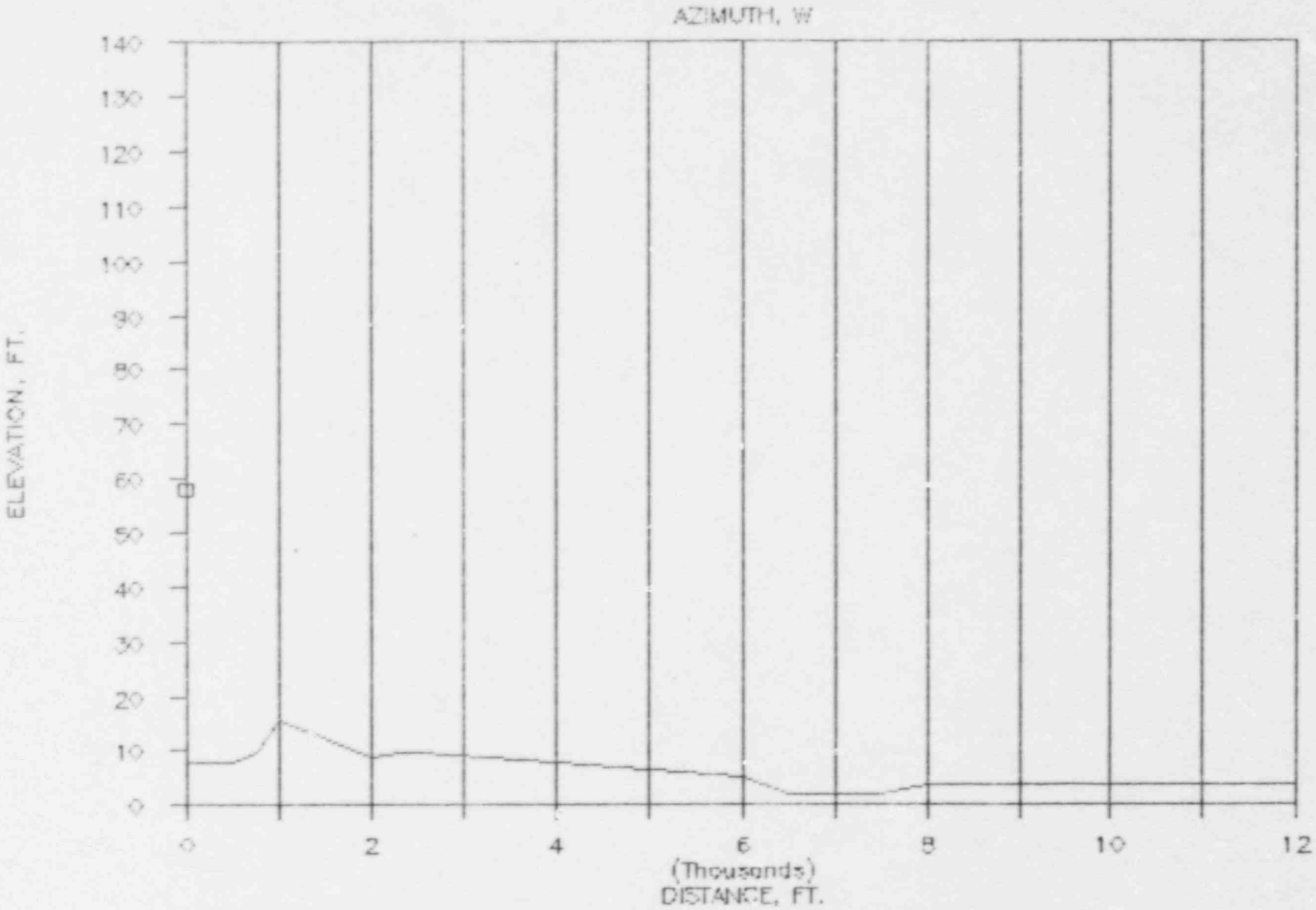
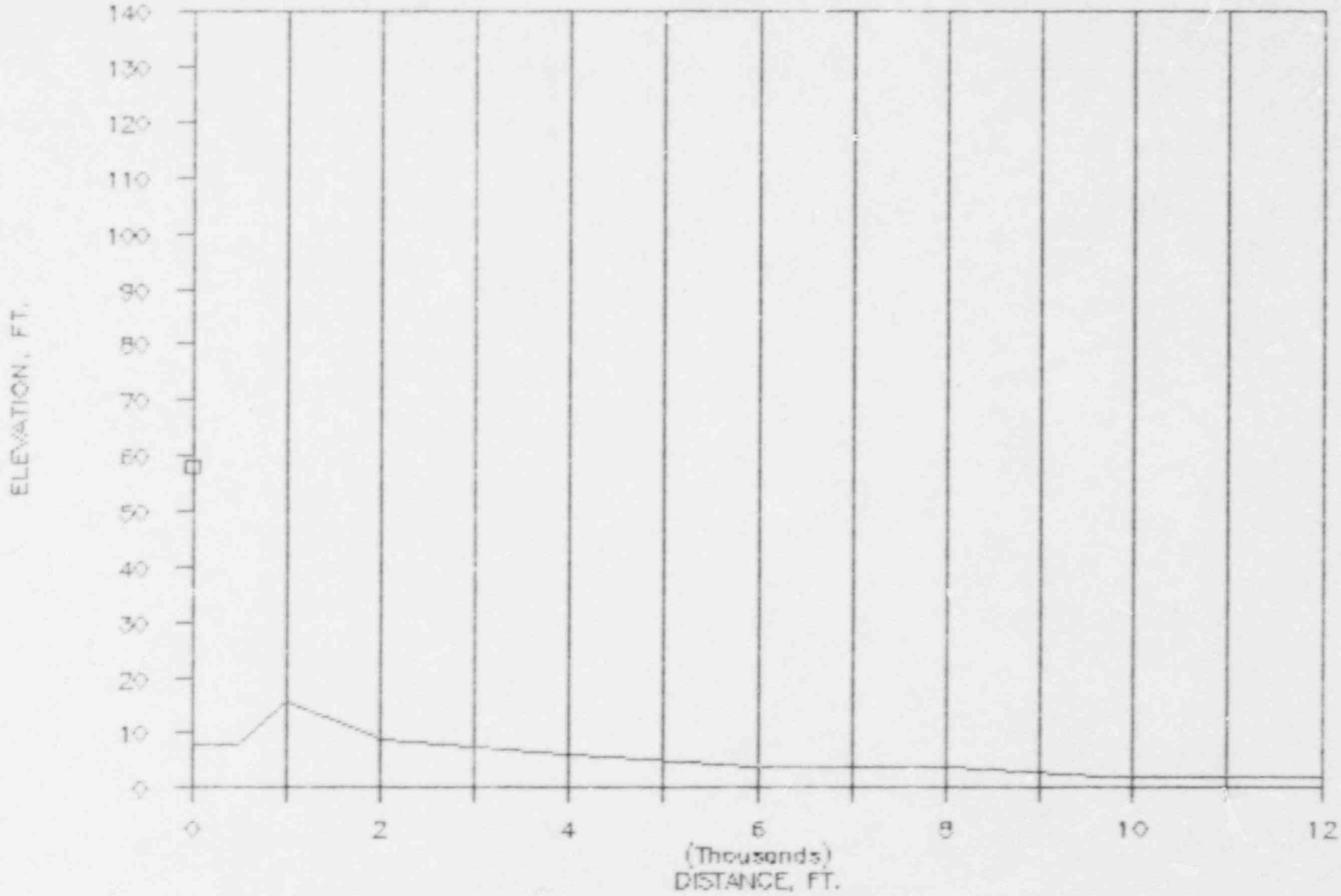


ARTIFICIAL ISLAND 102

AZIMUTH, WSW



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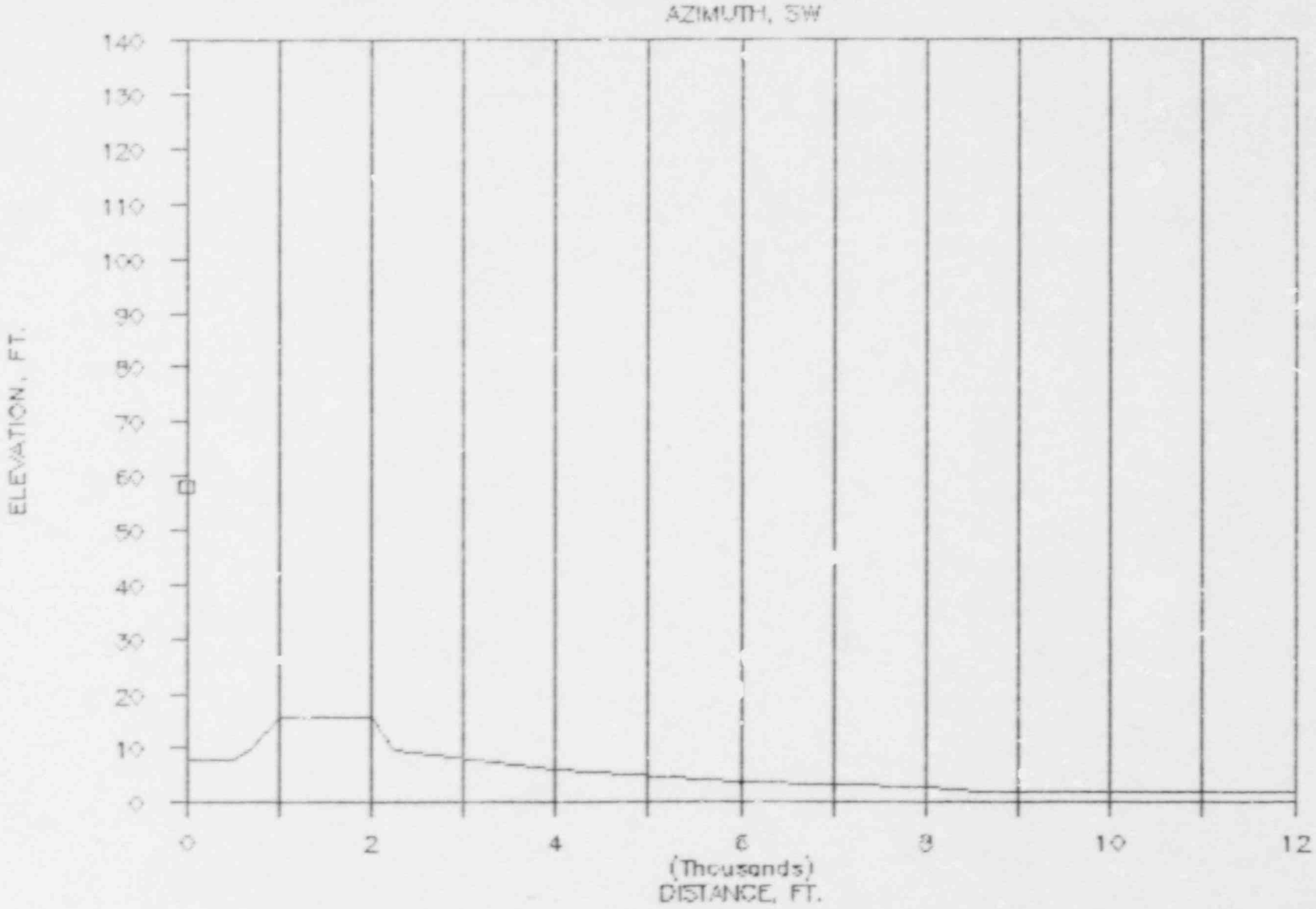
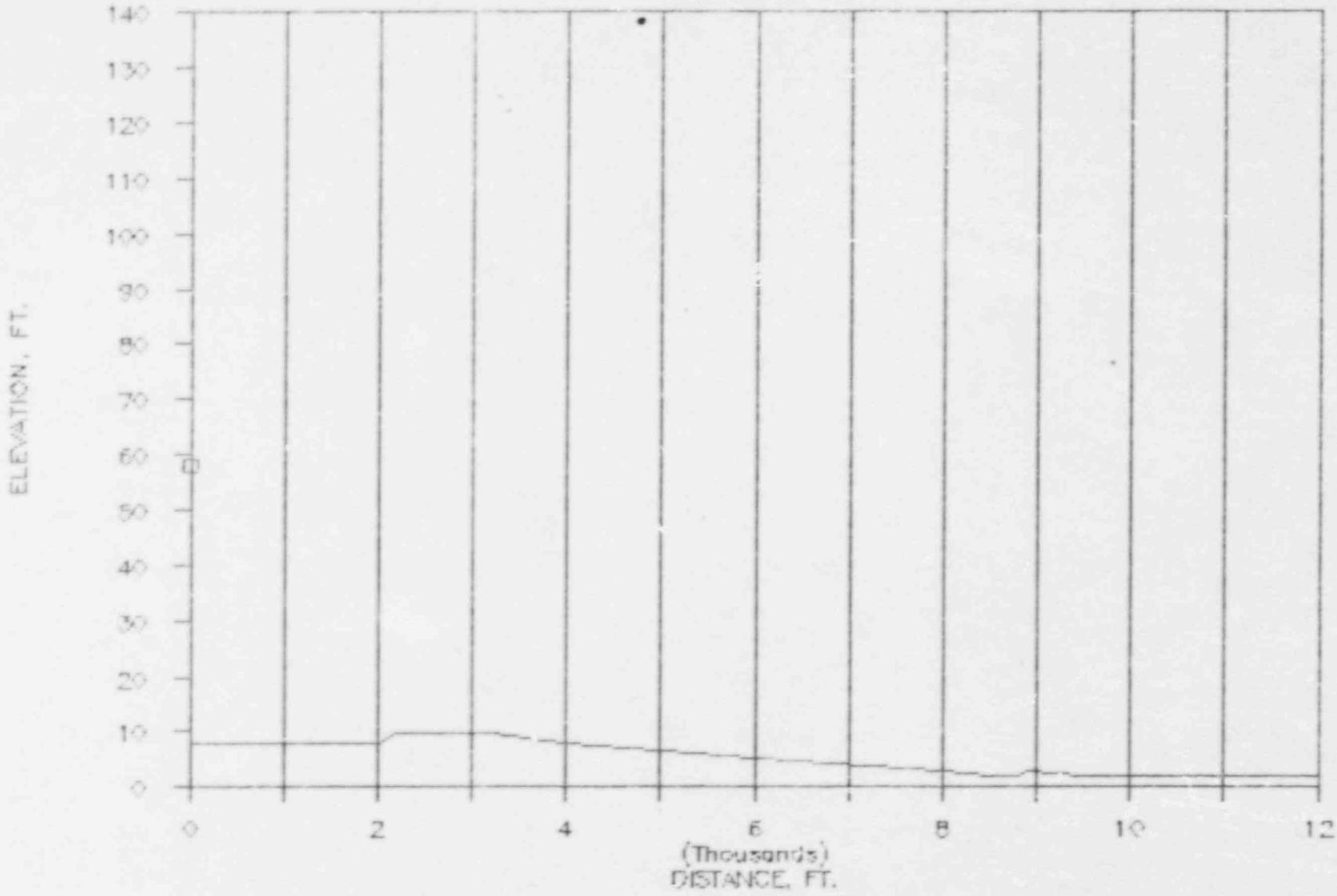


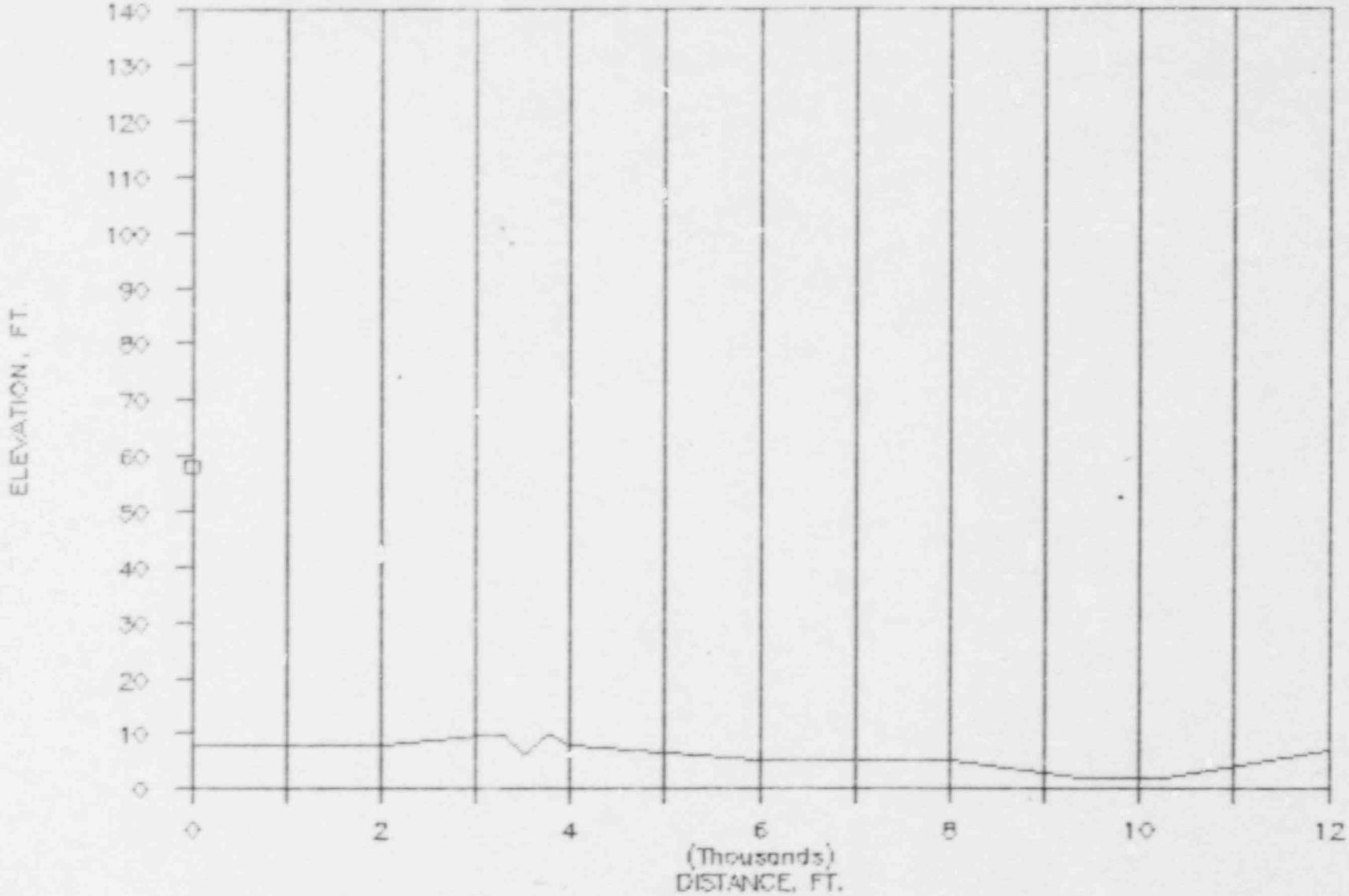
ARTIFICIAL ISLAND 102

AZIMUTH, SSW



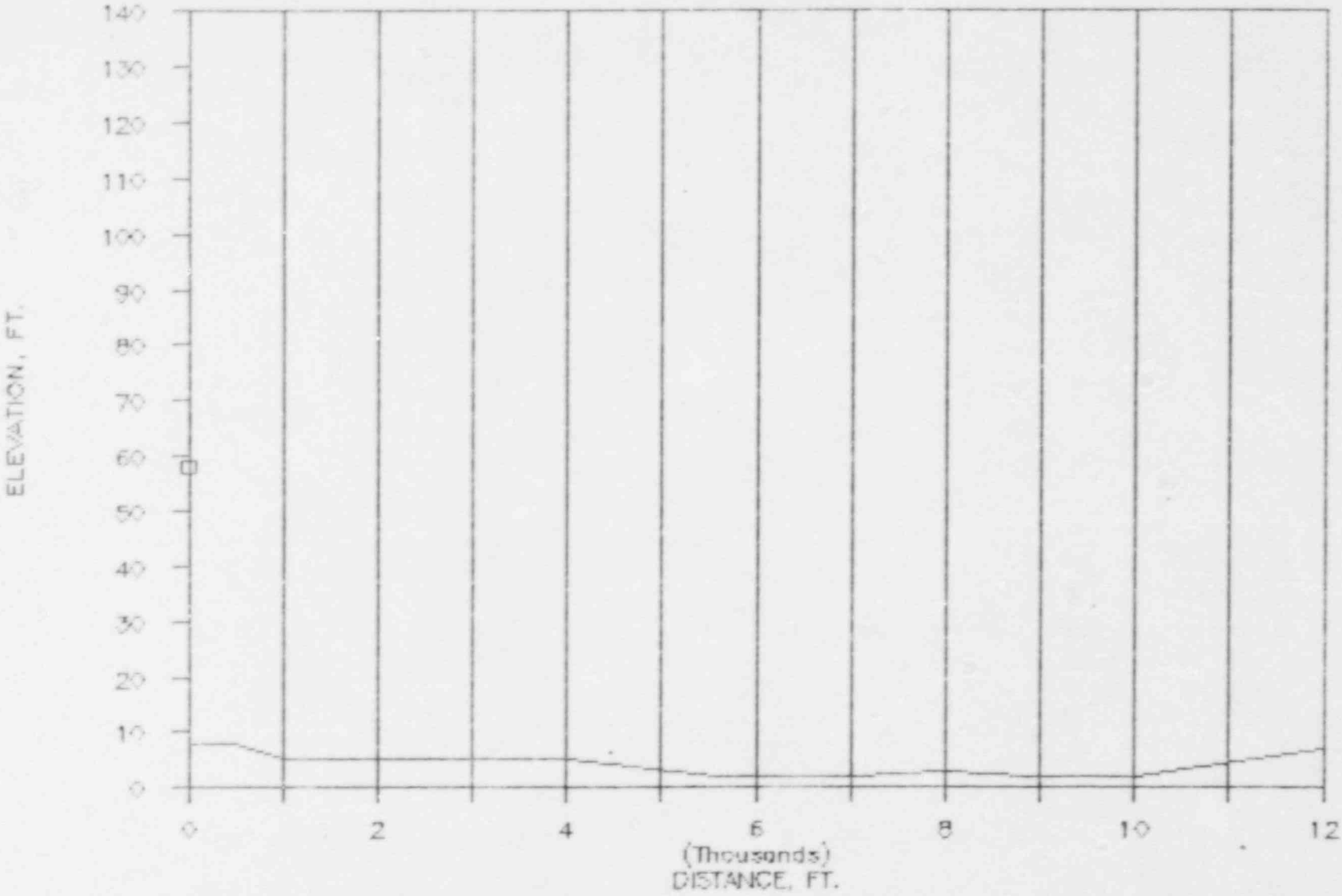
ARTIFICIAL ISLAND 102

AZIMUTH 5

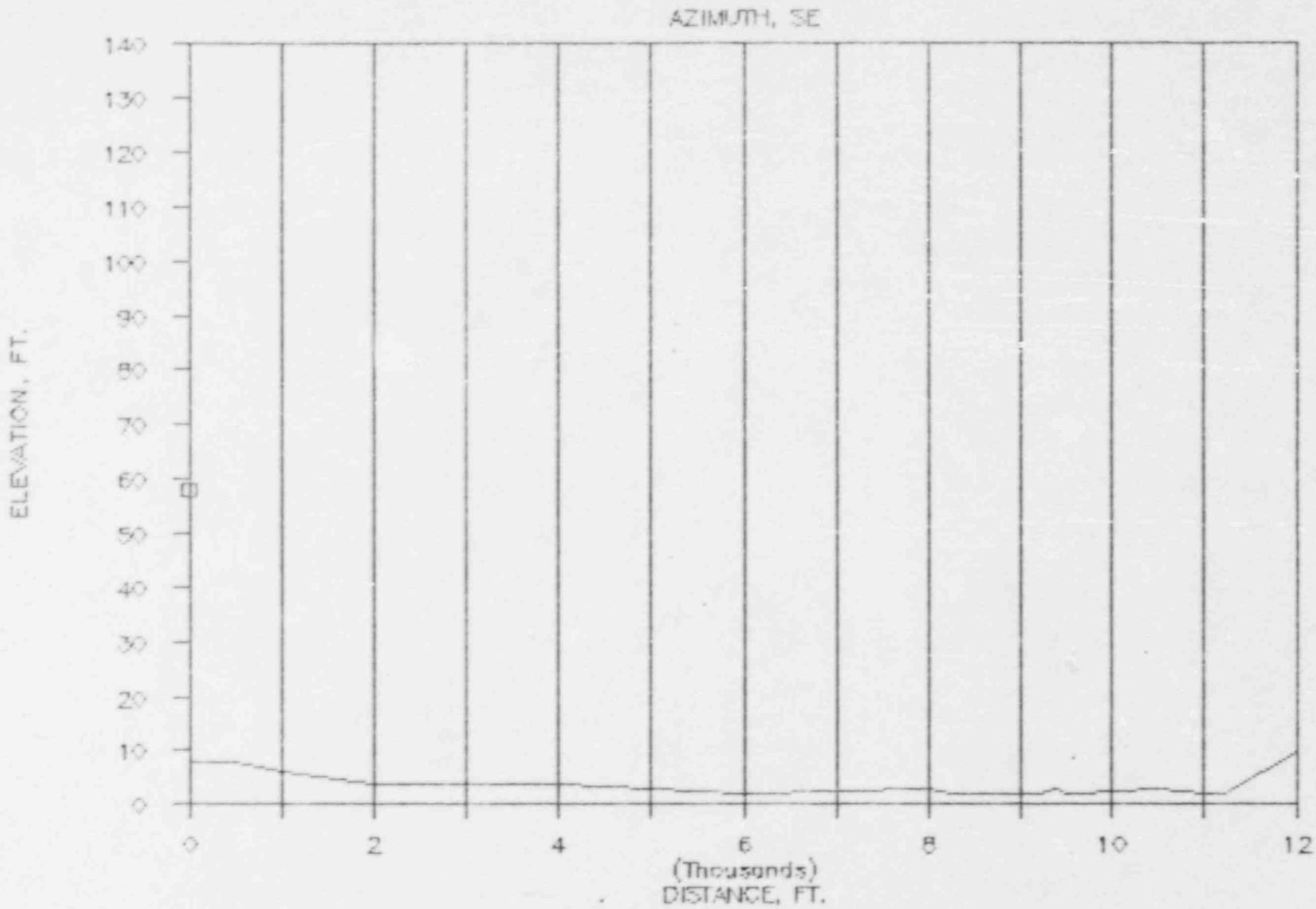


ARTIFICIAL ISLAND 102

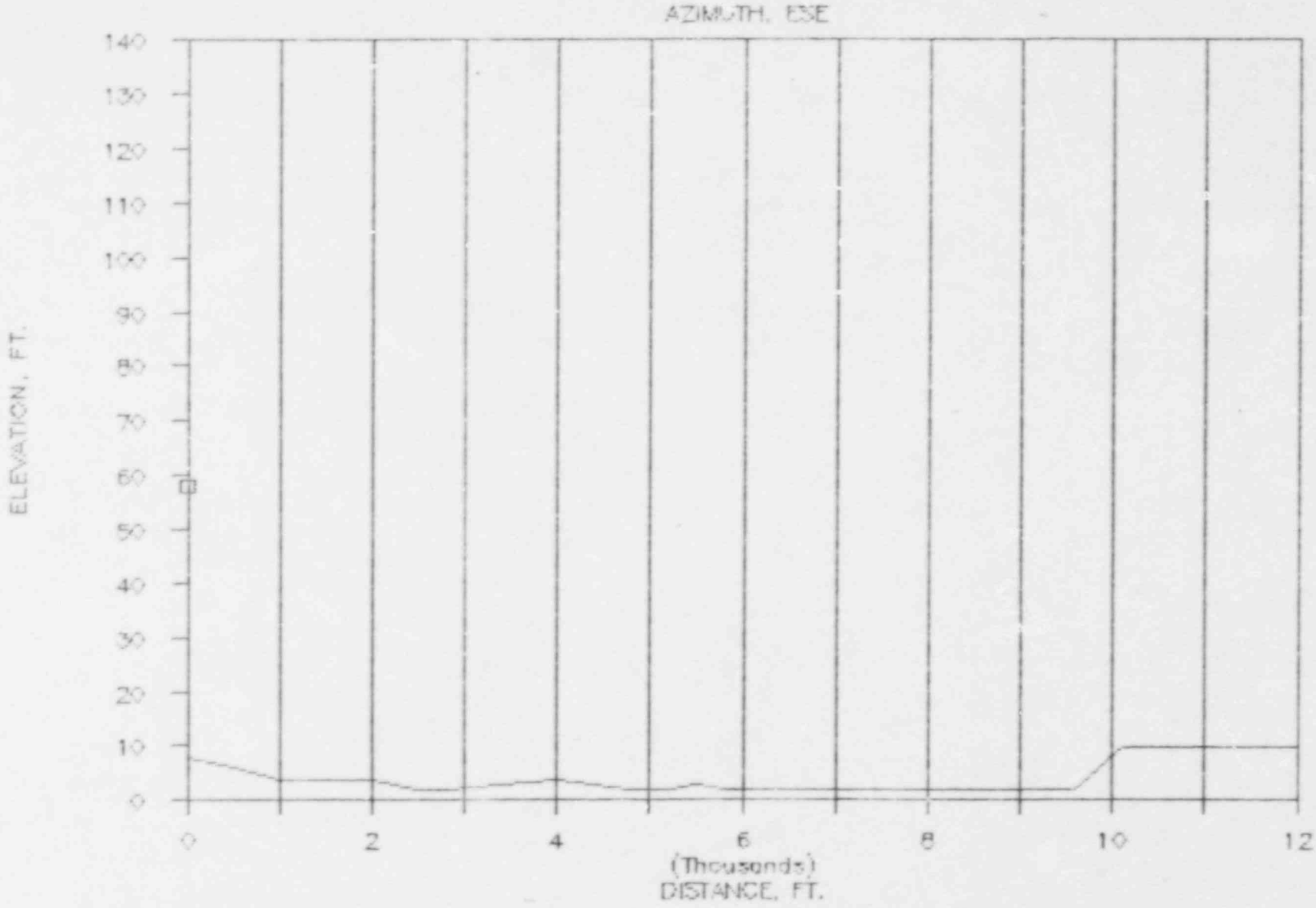
AZIMUTH, SSE



ARTIFICIAL ISLAND 102



ARTIFICIAL ISLAND 102



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #102-CYCLONE
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	6.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	5.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	3.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	3.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	3.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	2.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	22.00	SOFT	0.	NO	0.	0.
8	500.	67.50	6.00	HARD	0.	NO	0.	0.
9	1000.	67.50	5.00	HARD	0.	NO	0.	0.
10	2000.	67.50	3.00	HARD	0.	NO	0.	0.
11	4000.	67.50	3.00	HARD	0.	NO	0.	0.
12	6000.	67.50	2.00	HARD	0.	NO	0.	0.
13	8000.	67.50	2.00	HARD	0.	NO	0.	0.
14	12000.	67.50	2.00	HARD	0.	NO	0.	0.
15	500.	45.00	6.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	5.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	5.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	10.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	3.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	3.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	2.00	SOFT	0.	NO	0.	0.
22	500.	22.50	8.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	8.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	8.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	18.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	6.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	4.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	3.00	SOFT	0.	NO	0.	0.
29	500.	.00	8.00	SOFT	0.	NO	0.	0.
30	1000.	.00	8.00	SOFT	0.	NO	0.	0.
31	2000.	.00	8.00	SOFT	0.	NO	0.	0.
32	4000.	.00	10.00	SOFT	0.	NO	0.	0.
33	6000.	.00	8.00	SOFT	0.	NO	0.	0.
34	8000.	.00	15.00	SOFT	0.	NO	0.	0.
35	12000.	.00	14.00	SOFT	0.	NO	0.	0.
36	500.	337.50	8.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	16.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	16.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	16.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	17.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	16.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	8.00	SOFT	0.	NO	0.	0.
43	500.	315.00	6.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	16.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	16.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	9.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	8.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	8.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	8.00	SOFT	0.	NO	0.	0.
50	500.	292.50	8.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	8.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	8.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	8.00	SOFT	0.	NO	0.	0.
54	6000.	292.50	5.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	5.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	7.00	SOFT	0.	NO	0.	0.
57	500.	270.00	8.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	16.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	9.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	8.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	5.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	4.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	4.00	SOFT	0.	NO	0.	0.
64	500.	247.50	8.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	16.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	9.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	6.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	4.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	4.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	2.00	SOFT	0.	NO	0.	0.
71	500.	225.00	8.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	16.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	16.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	6.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	4.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	3.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	2.00	SOFT	0.	NO	0.	0.
78	500.	202.50	8.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	8.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	8.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	8.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	5.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	3.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	2.00	SOFT	0.	NO	0.	0.
85	500.	180.00	8.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	8.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	8.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	8.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	5.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	5.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	7.00	SOFT	0.	NO	0.	0.
92	500.	157.50	8.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	5.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	5.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	5.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	2.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	3.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	7.00	SOFT	0.	NO	0.	0.
99	500.	135.00	8.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	6.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	4.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	4.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	2.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	3.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	10.00	SOFT	0.	NO	0.	0.
106	500.	112.50	6.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	4.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	4.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	4.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	2.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	2.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	10.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #102-CYCLONE
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-CYCLONE	155.6	157.9	105.0	135.0	121.0	139.0	157.0	146.0	145.0	143.0	144.0

XD= .00 YD= .00 ZD= 8.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #102-CYCLONE
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

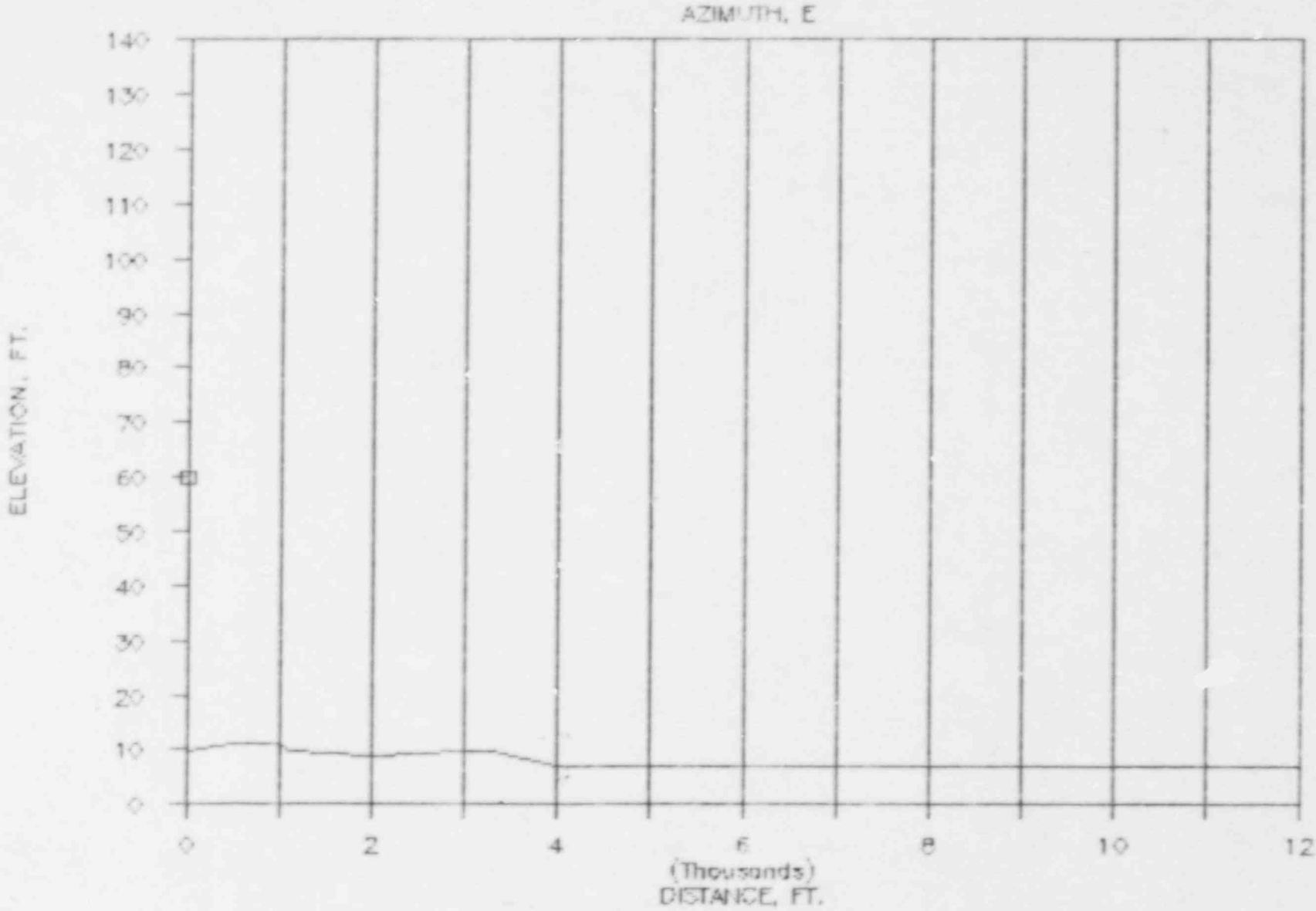
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #102-CYCLONE

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

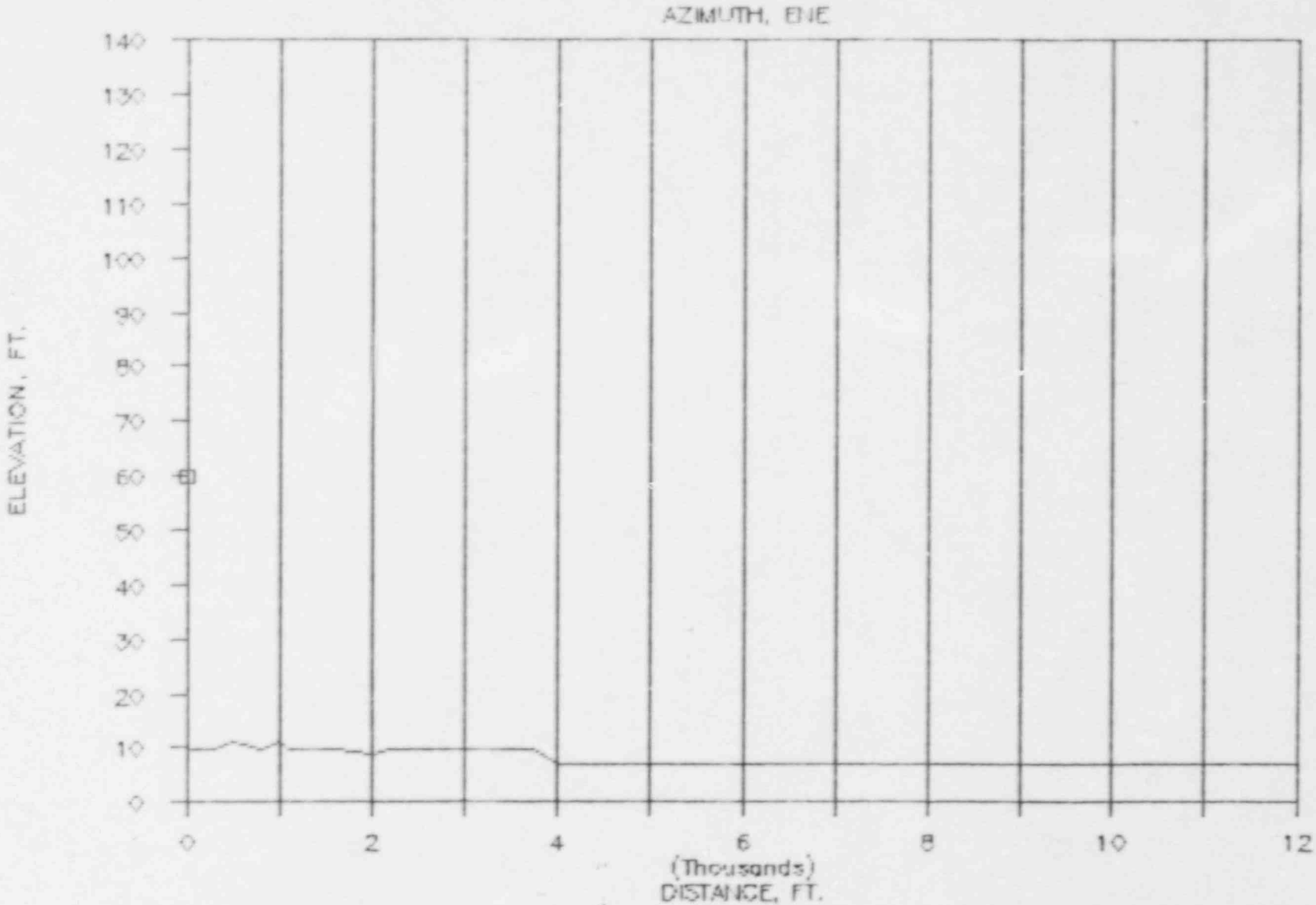
DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	105.	95.	87.	80.	76.	72.	66.
ENE	106.	99.	92.	84.	79.	75.	68.
NE	105.	95.	87.	80.	76.	72.	66.
NNE	105.	95.	81.	65.	56.	51.	44.
N	105.	94.	79.	63.	55.	50.	42.
NNW	105.	94.	78.	62.	55.	50.	42.
NW	105.	94.	78.	62.	55.	50.	41.
WNW	105.	94.	79.	62.	55.	50.	42.
W	105.	95.	80.	63.	56.	51.	43.
WSW	105.	95.	82.	66.	57.	52.	45.
SW	105.	95.	87.	80.	76.	72.	66.
SSW	105.	95.	87.	80.	76.	72.	66.
S	105.	95.	87.	80.	76.	72.	66.
SSE	105.	95.	87.	80.	76.	72.	66.
SE	105.	95.	87.	80.	76.	72.	66.
ESE	105.	95.	87.	80.	76.	72.	66.

ARTIFICIAL ISLAND 106



ARTIFICIAL ISLAND 106



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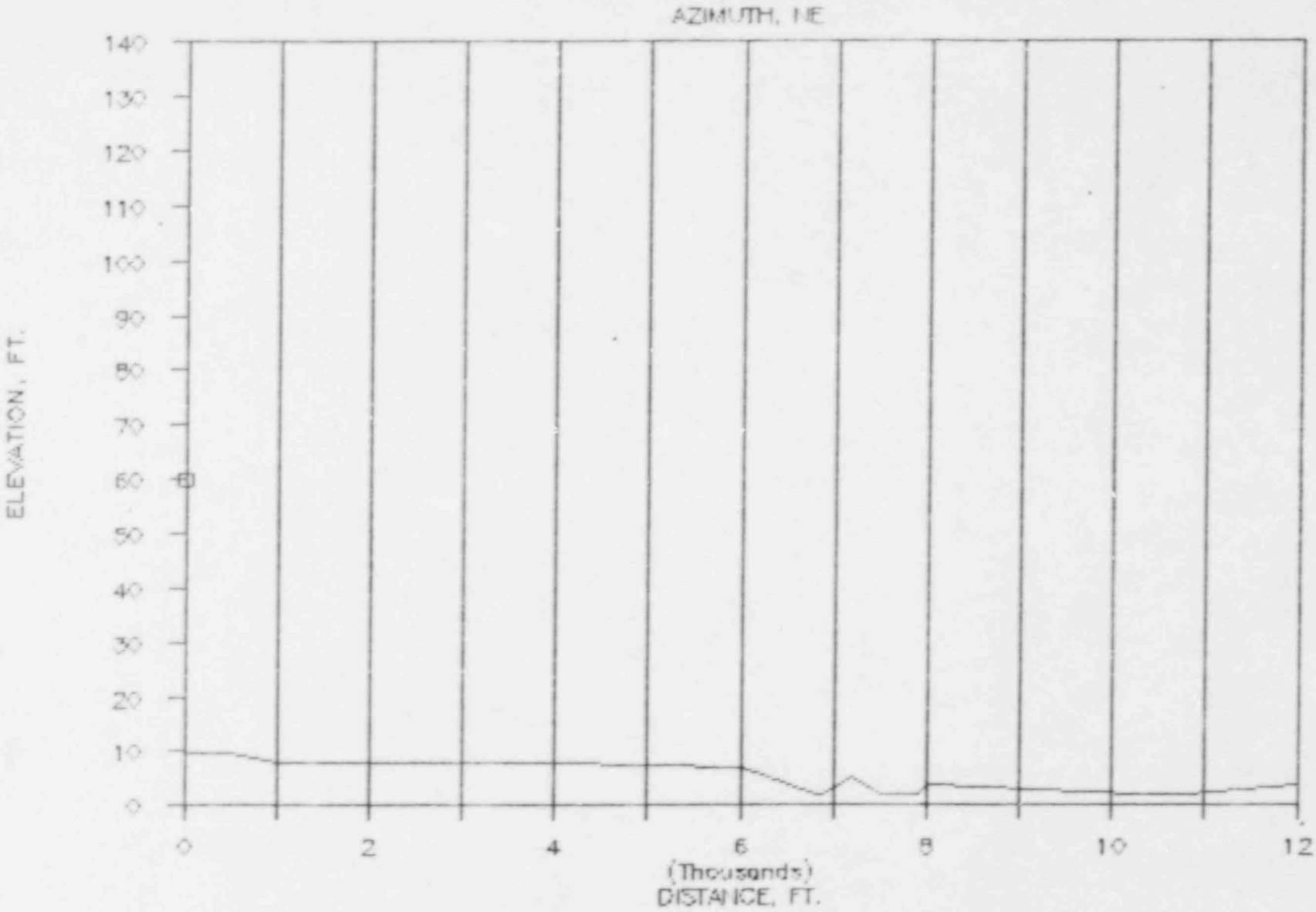

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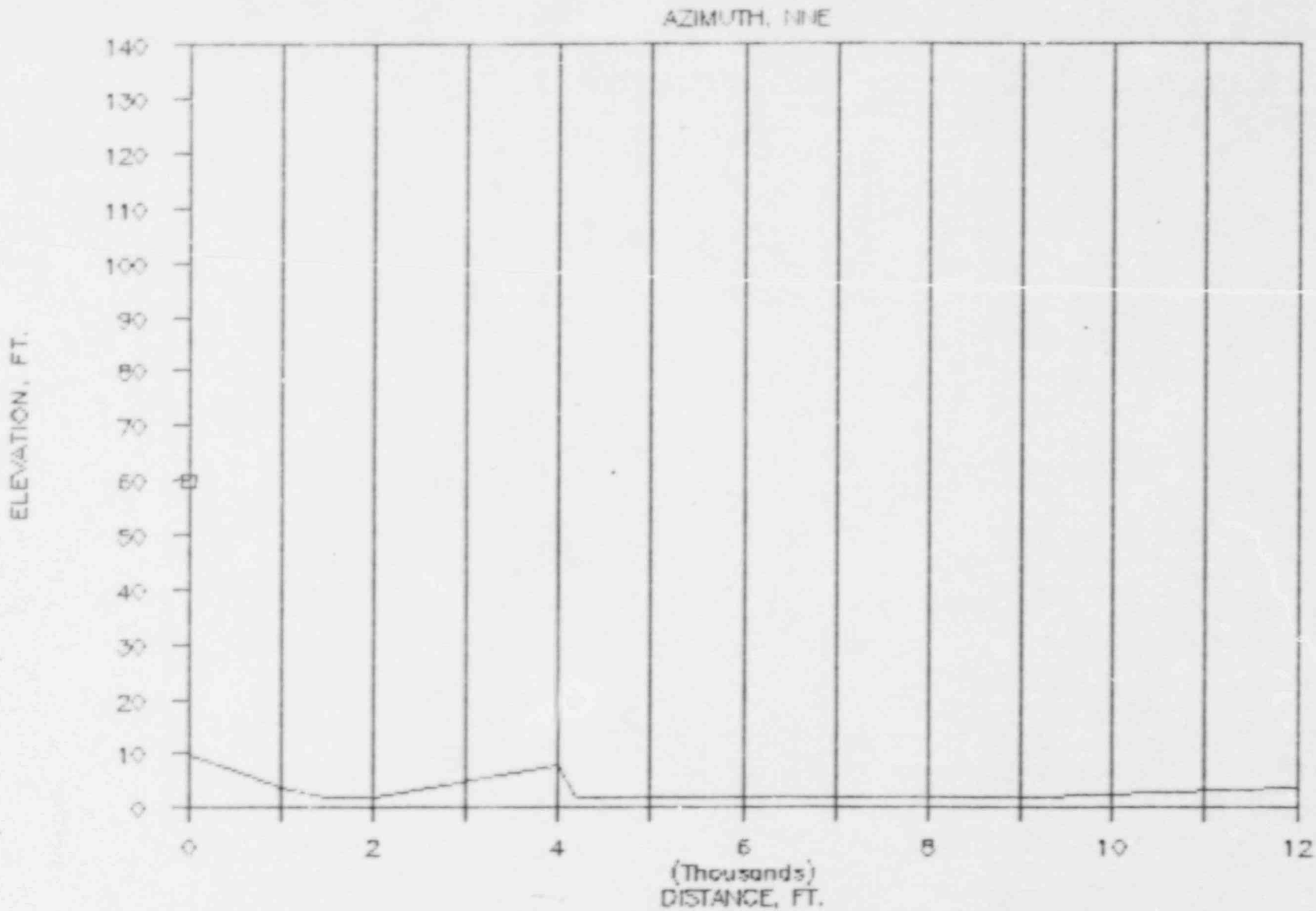
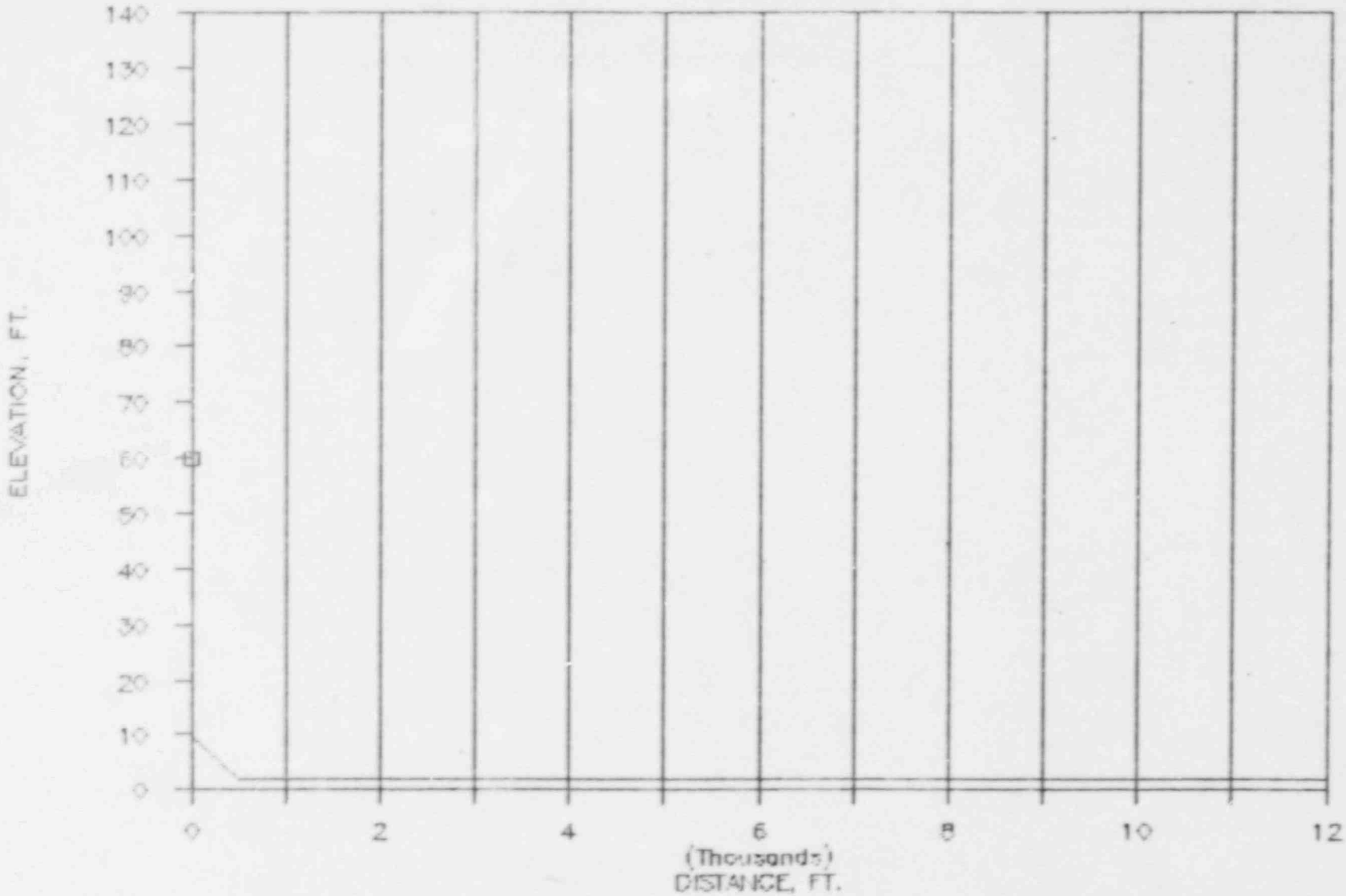


ARTIFICIAL ISLAND 106

AZIMUTH, NNW



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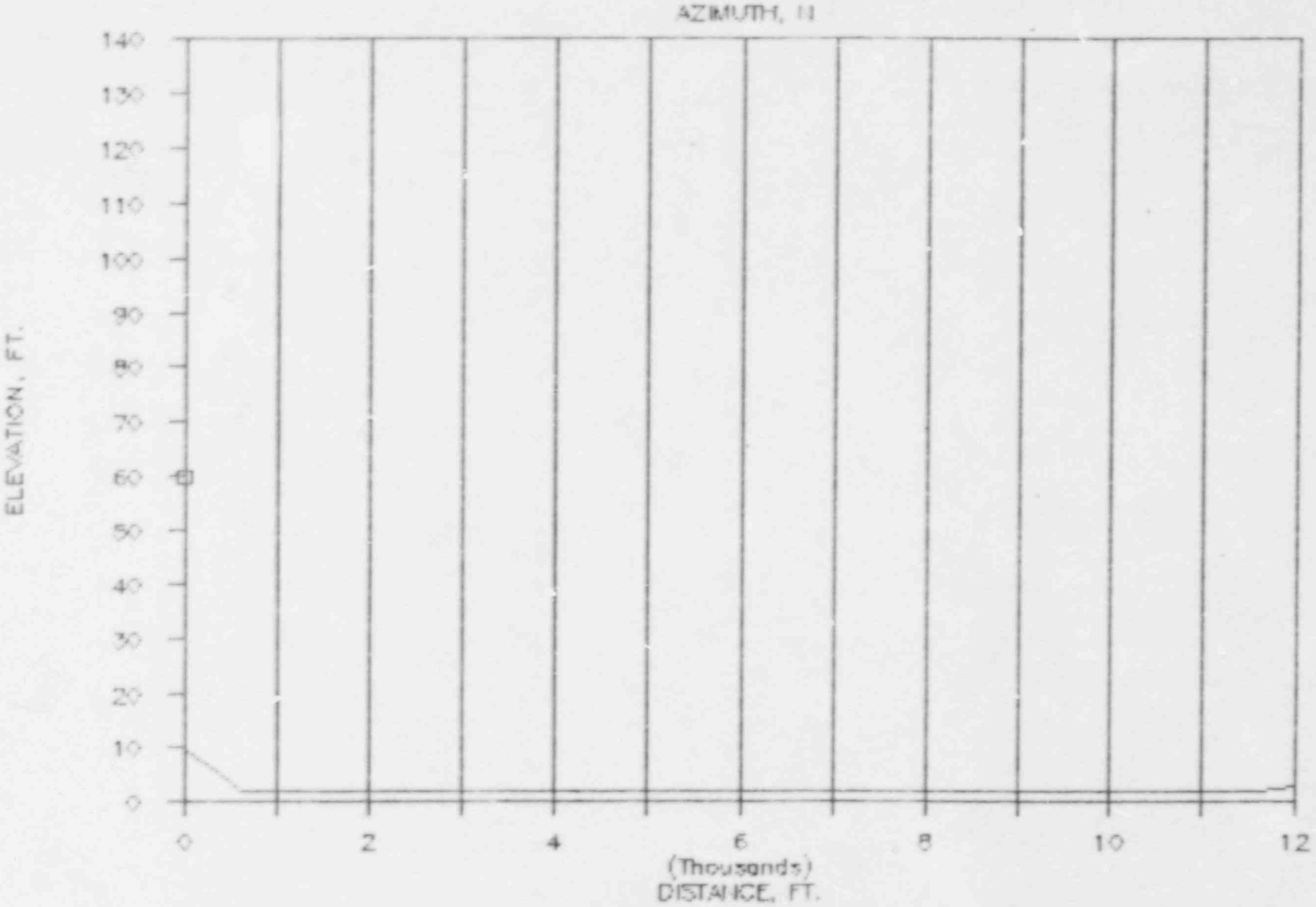

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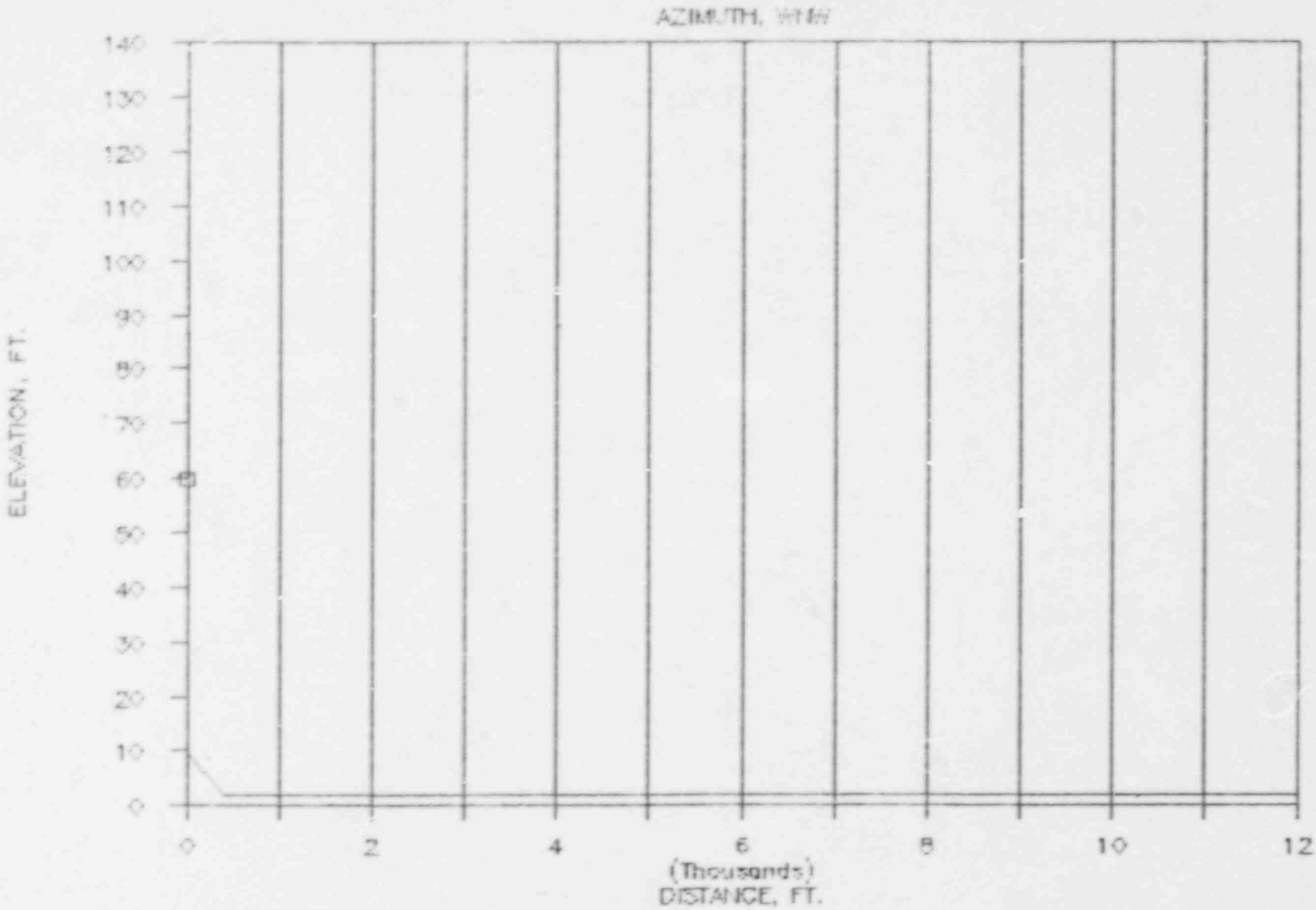

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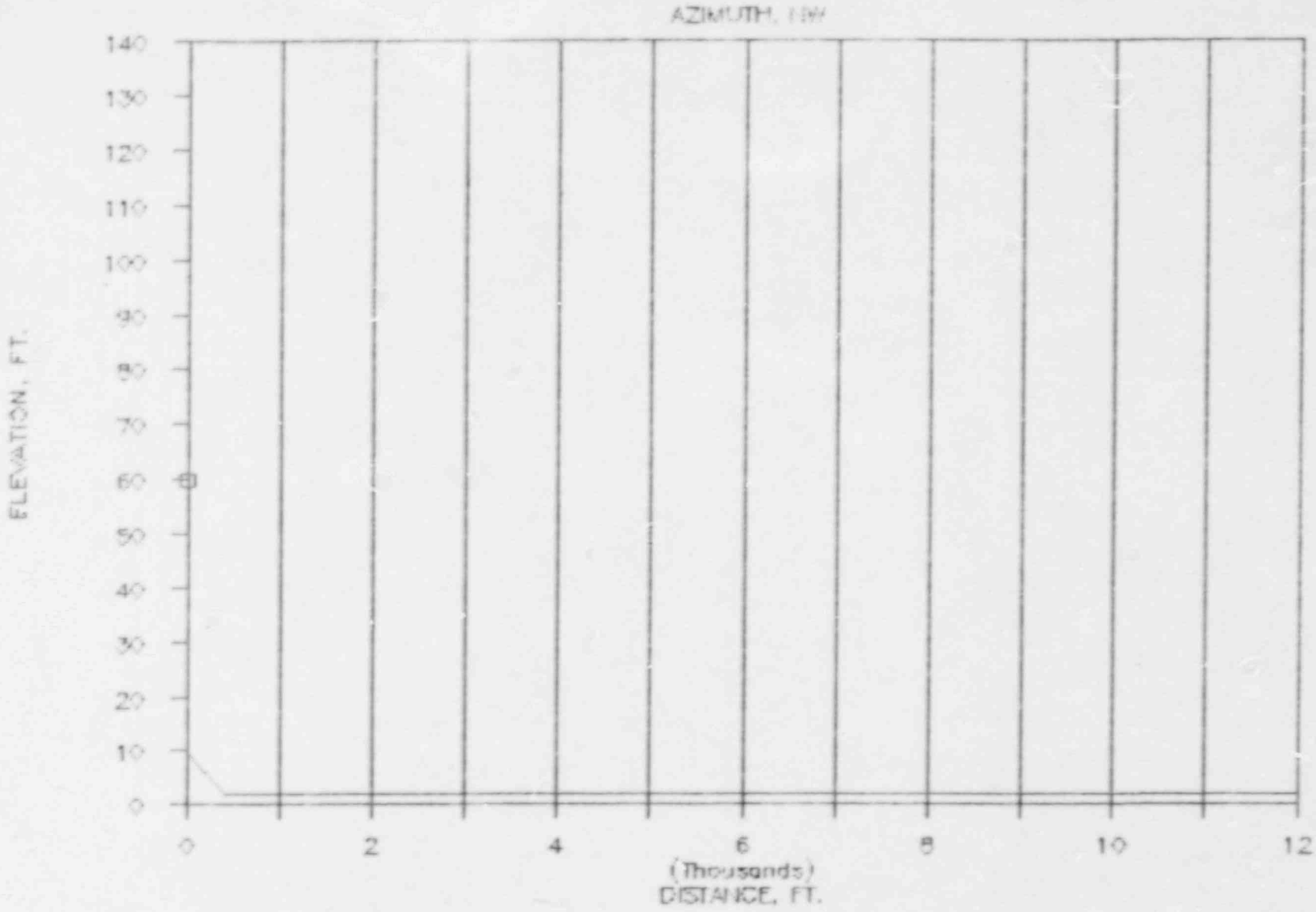

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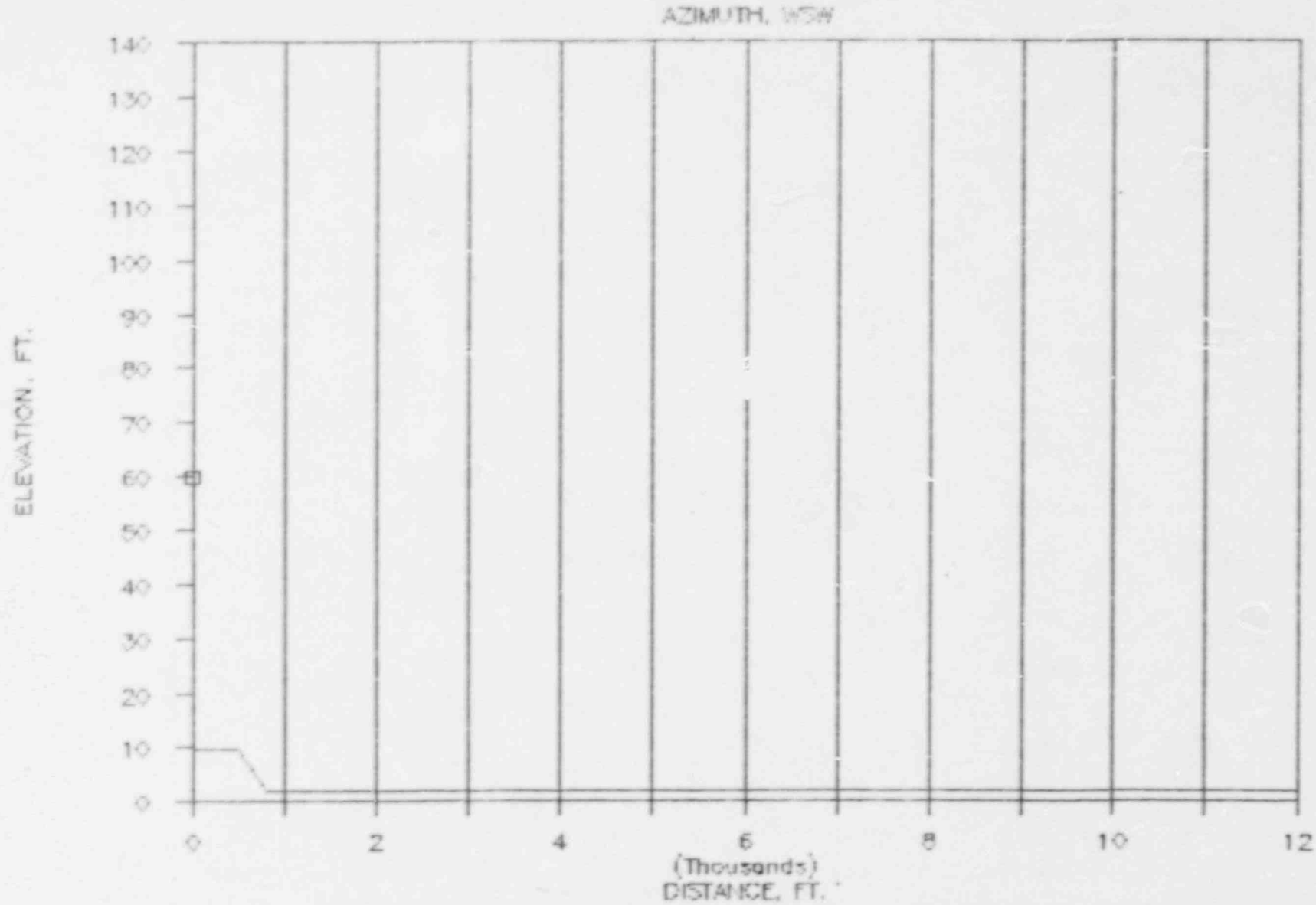

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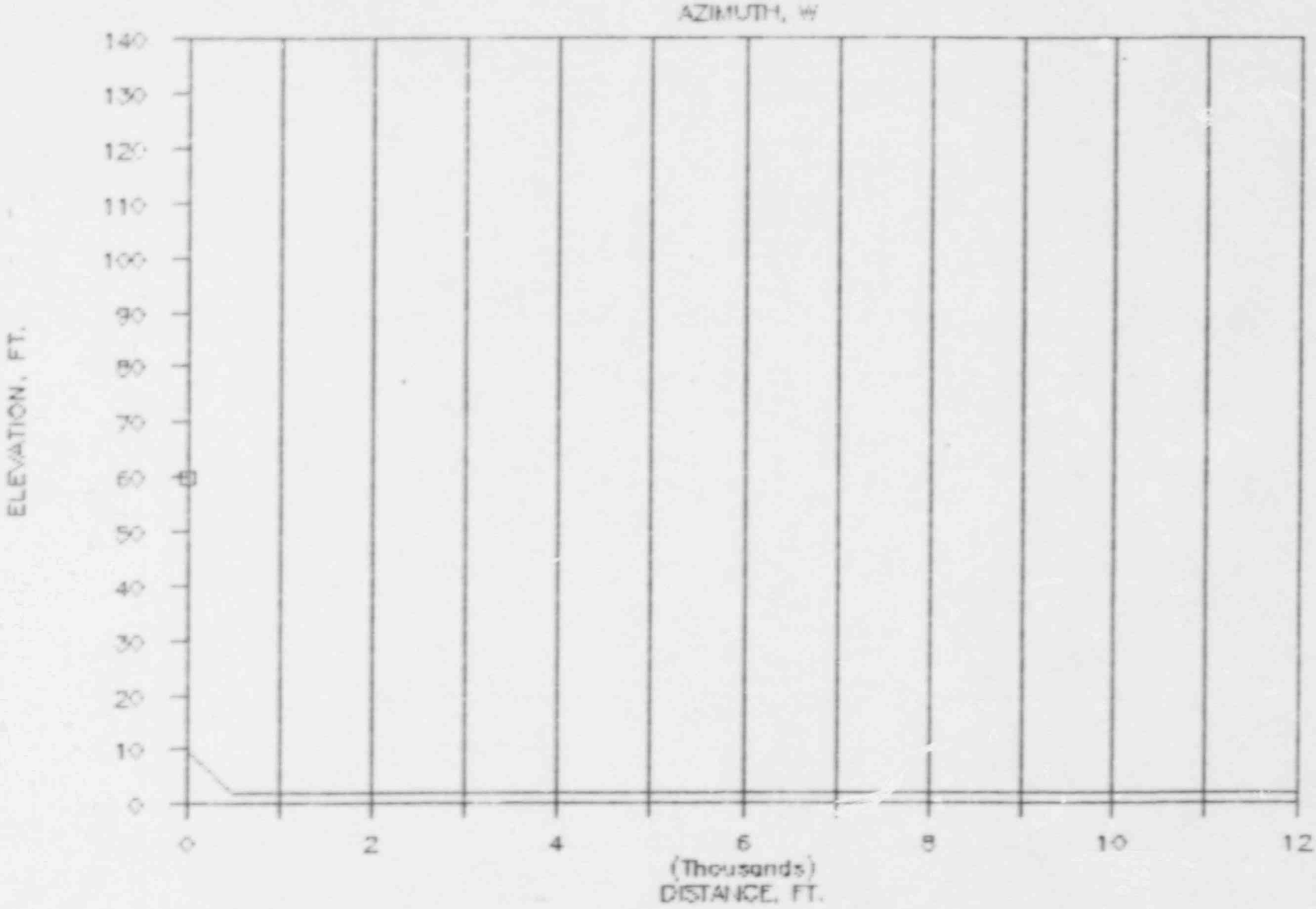
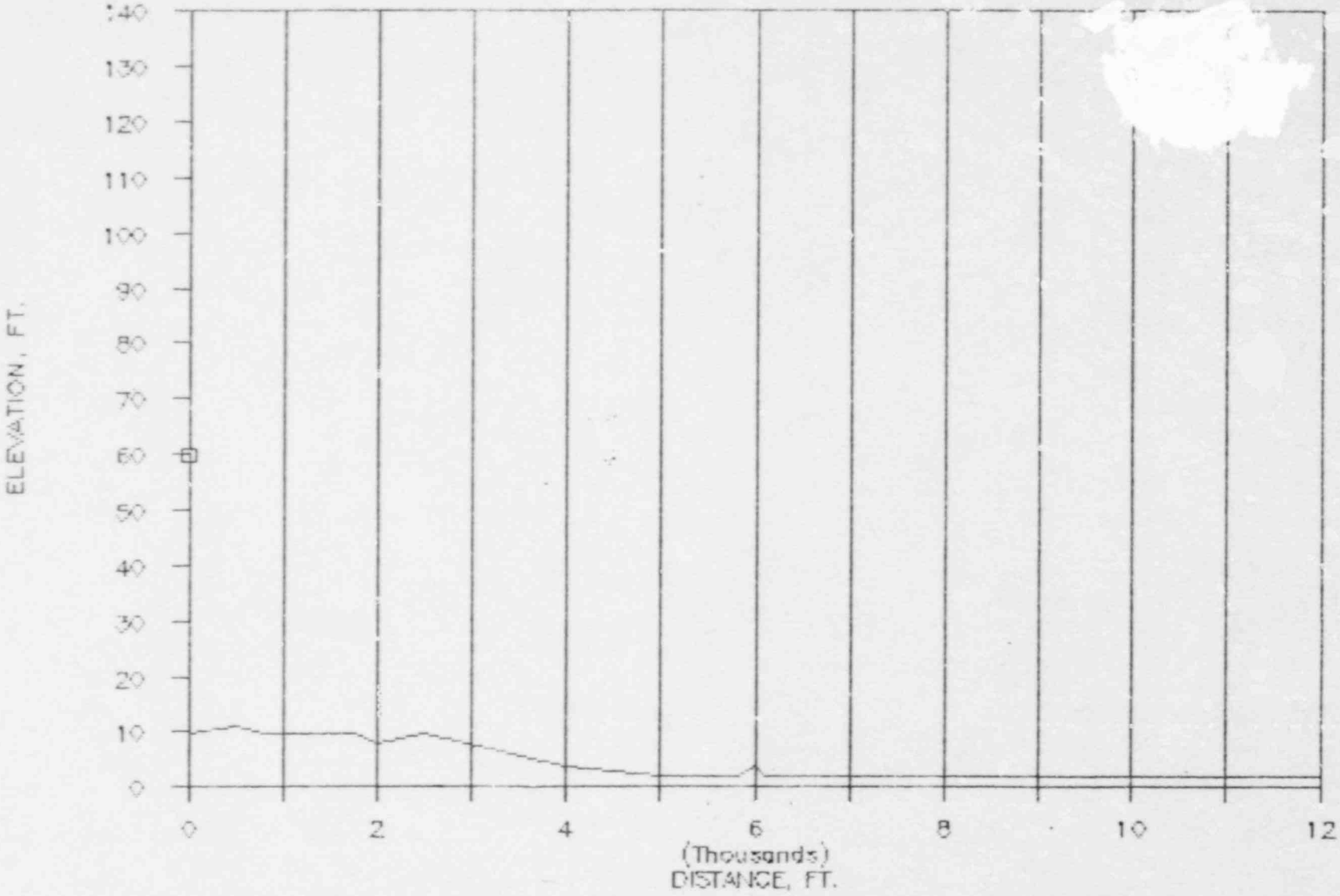


ARTIFICIAL ISLAND 106

AZIMUTH, SSW



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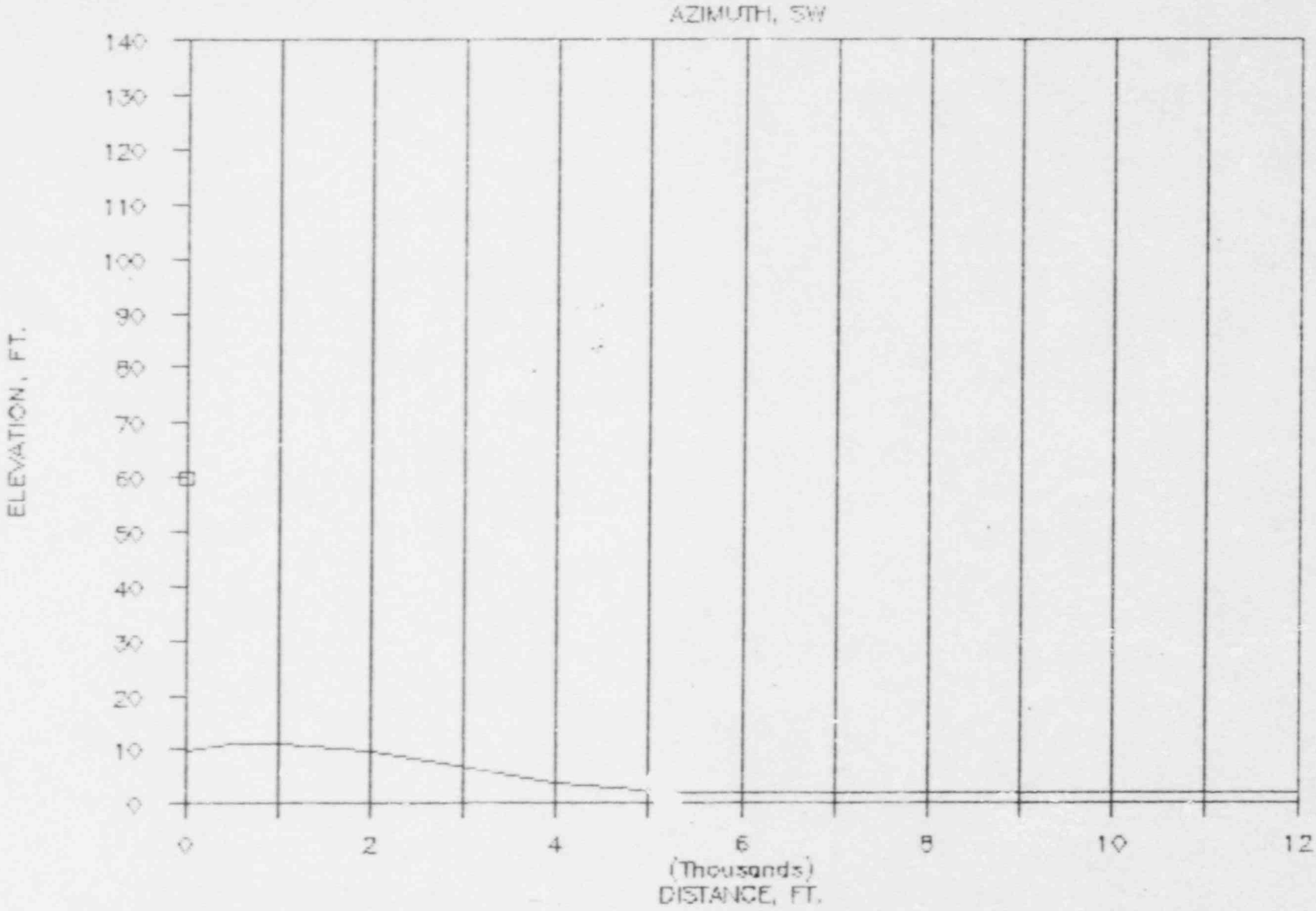
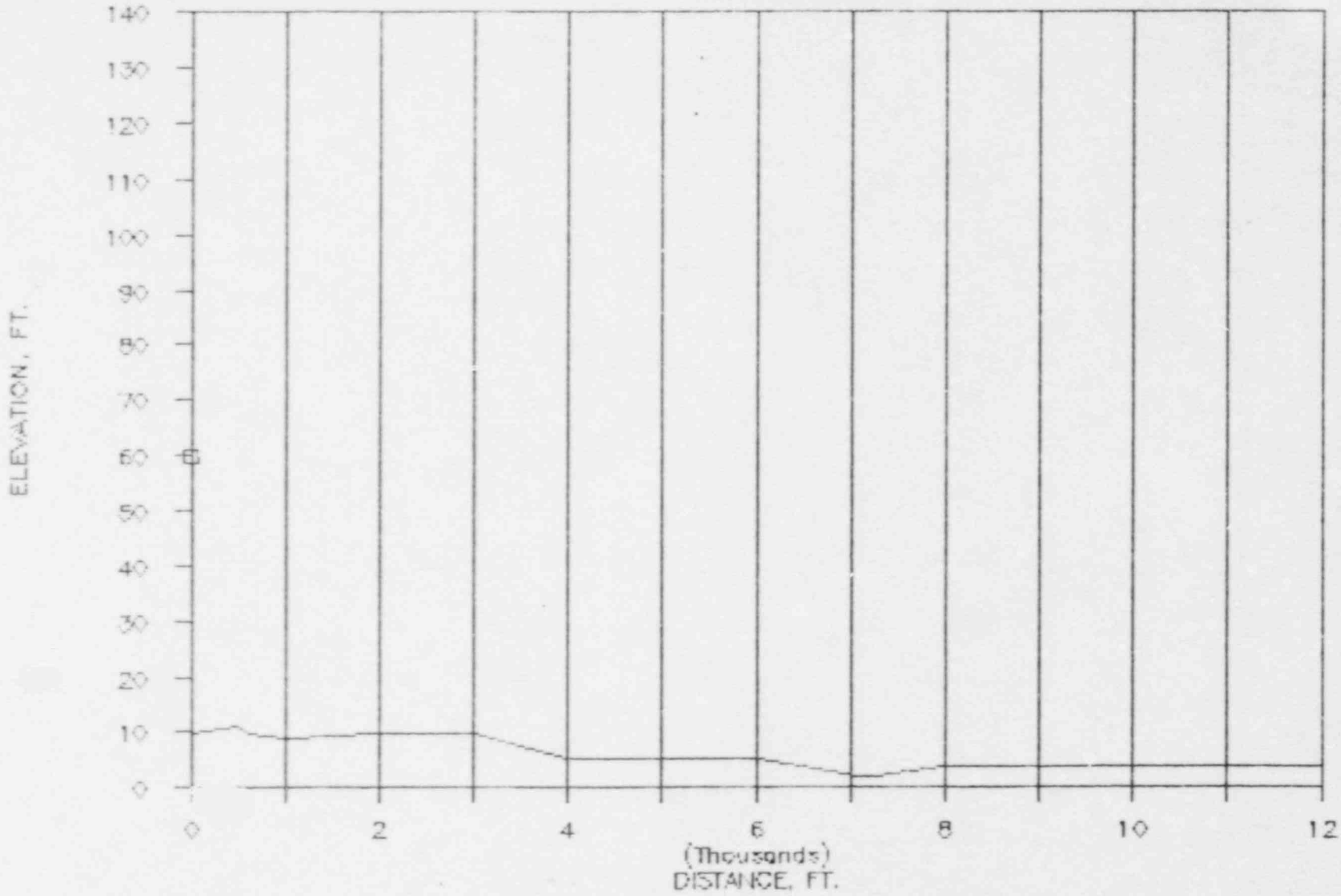


ARTIFICIAL ISLAND 106

AZIMUTH, SSE



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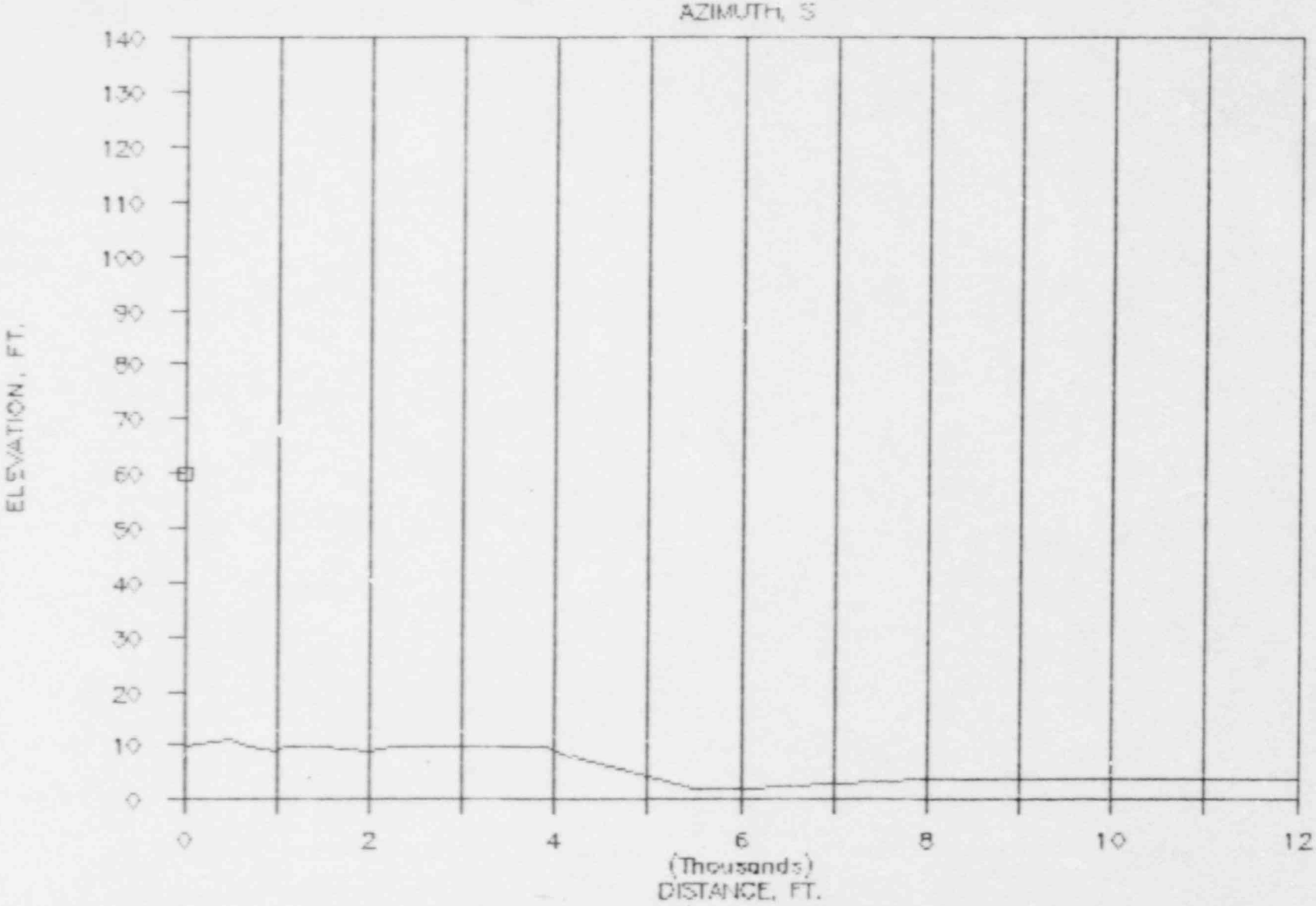

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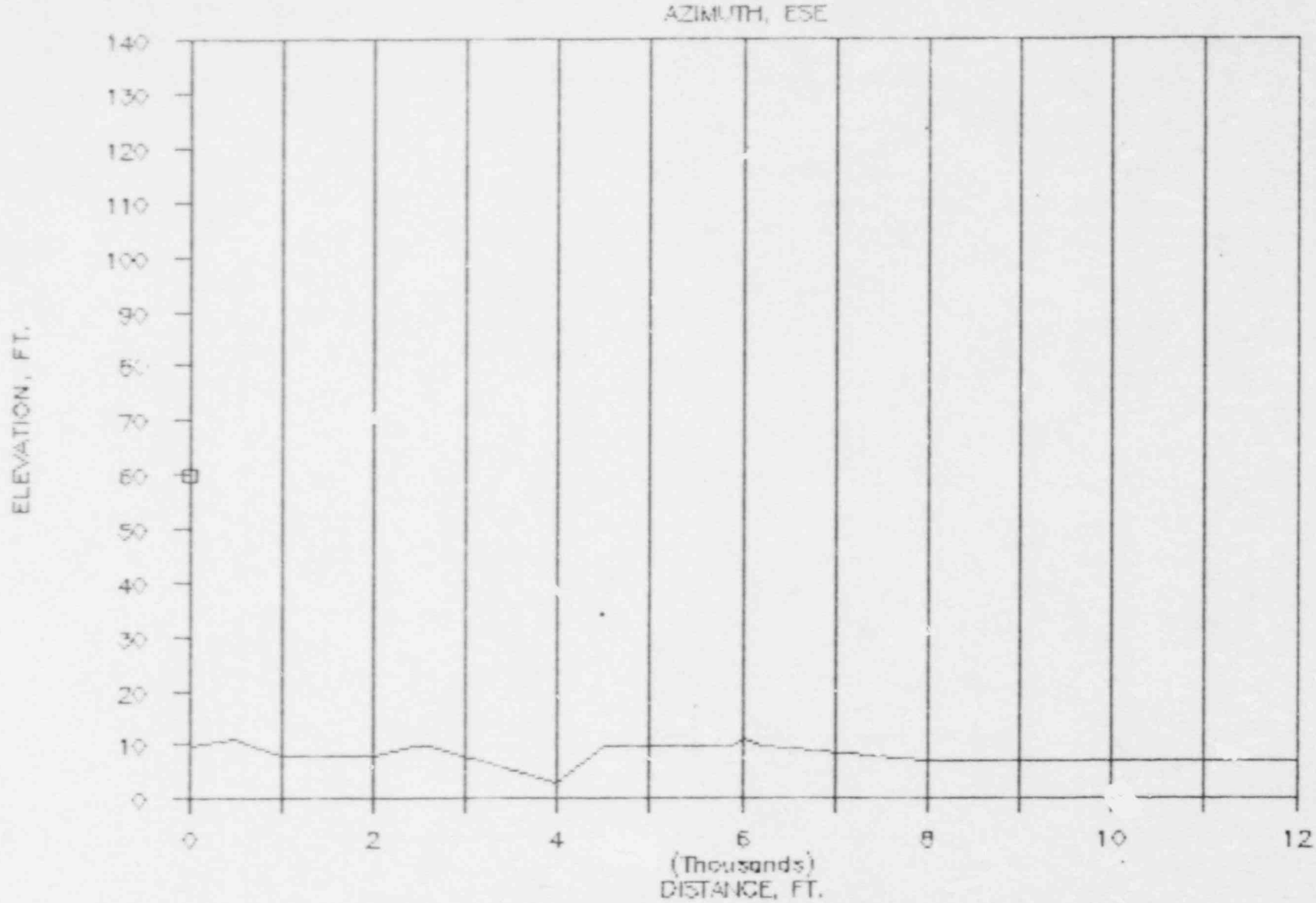
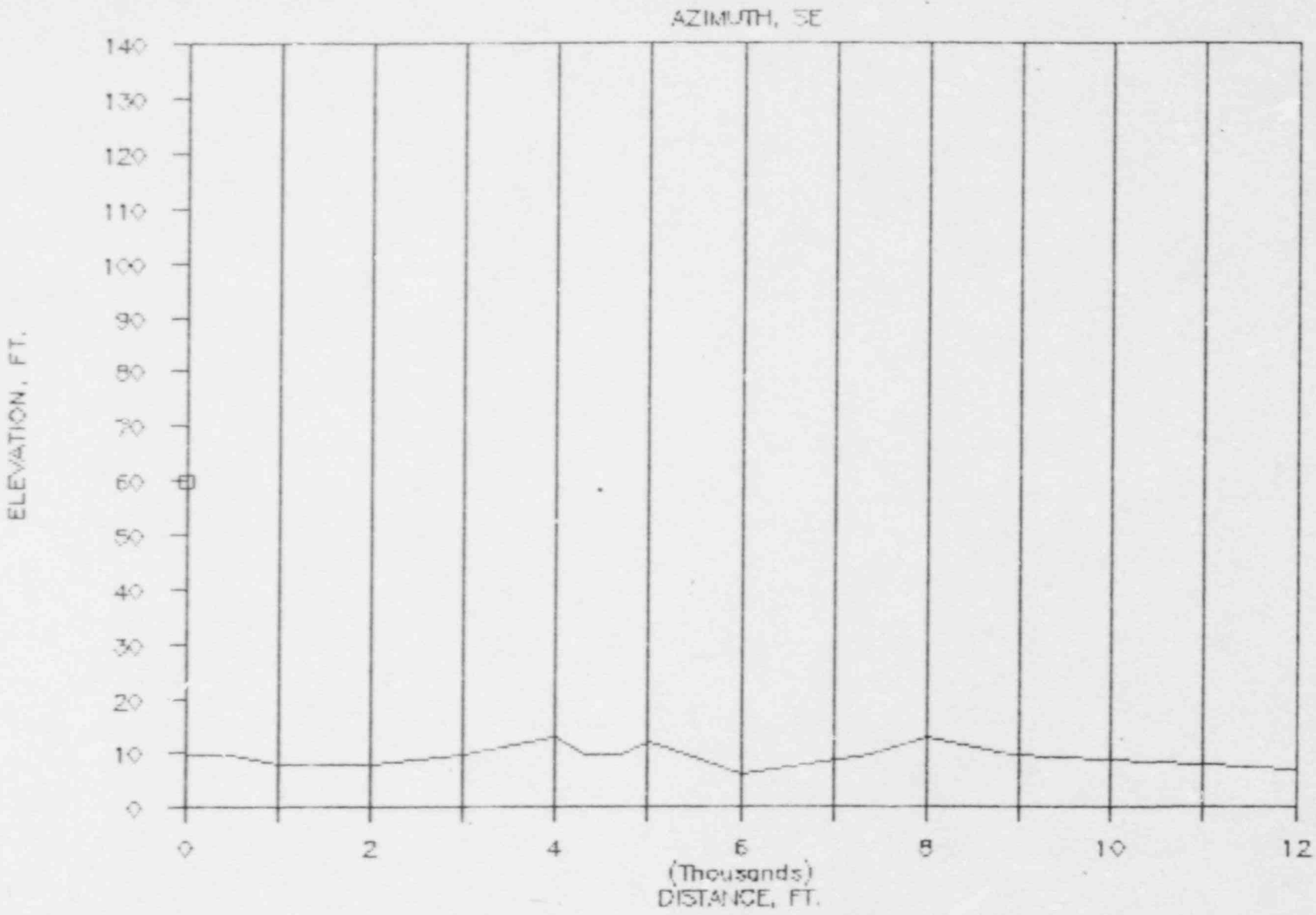


ARTIFICIAL ISLAND 106



GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	6.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	25.00	SOFT	0.	YES	3900.	30.
75	6000.	225.00	30.00	SOFT	0.	YES	5900.	40.
76	8000.	225.00	55.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	62.00	SOFT	0.	NO	0.	0.
78	500.	202.50	13.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	15.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	4.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	10.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	10.00	SOFT	0.	YES	5600.	30.
83	8000.	202.50	35.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	40.00	SOFT	0.	NO	0.	0.
85	500.	180.00	11.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	15.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	9.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	4.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	6.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	15.00	SOFT	0.	YES	7750.	20.
91	12000.	180.00	4.00	SOFT	0.	YES	10100.	20.
92	500.	157.50	10.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	22.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	18.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	2.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	12.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	8.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	13.00	SOFT	0.	YES	10700.	20.
99	500.	135.00	10.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	18.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	8.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	7.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	2.00	SOFT	0.	YES	5600.	10.
104	8000.	135.00	3.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	2.00	SOFT	0.	NO	0.	0.
106	500.	112.50	15.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	15.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	15.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	20.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	9.00	SOFT	0.	YES	4500.	30.
111	8000.	112.50	5.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	2.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #217-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 IO= 28.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #217-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #217-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	72.	66.
NE	107.	97.	87.	80.	76.	65.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	80.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	74.	67.	72.	66.
SSW	107.	97.	87.	80.	67.	72.	66.
S	107.	97.	87.	80.	76.	67.	61.
SSE	107.	97.	87.	80.	76.	72.	61.
SE	107.	97.	87.	80.	70.	72.	66.
ESE	107.	97.	87.	80.	70.	72.	66.

APPENDIX B

SAMPLE SIZE DETERMINATION

APPENDIX B

SAMPLE SIZE DETERMINATION

The number of households that need to be surveyed is determined based upon the need to obtain a sample size sufficient to obtain a 95% confidence interval with precision (half-width) of 0.05 for the estimate of the proportion alerted. The exact number of households to be surveyed can be derived from the following statistical considerations. For relatively large sample sizes ($n \geq 30$), taken without replacement from a population (N), the sampling distribution for proportions (e.g., the proportion of the population alerted) is nearly a normal distribution, the mean of which is the proportion (p) of the population alerted and the variance of which is

$$p(1 - p)/n \left(\frac{N - n}{N - 1}\right)$$

If P is the observed sample proportion, then for a particular confidence level with confidence coefficient Z_c,

$$(P - p)^2 \leq Z_c^2 \, p(1 - p)/n \left(\frac{N - n}{N - 1}\right)$$

Thus, for this confidence level, the actual proportion of the population alerted satisfies the following inequalities:

$$\frac{P + \frac{Z_c^2}{2n}\left(\frac{N - n}{N - 1}\right) - Z_c\sqrt{\frac{P(1 - P)}{n}\left(\frac{N - n}{N - 1}\right) + \frac{Z_c^2}{4n^2}\left(\frac{N - n}{N - 1}\right)^2}}{1 + \frac{Z_c^2}{n}\left(\frac{N - n}{N - 1}\right)} \leq p \text{ and}$$

A second approximation that can be made is to neglect the terms in W^2 within the bracket in the numerator. Analysis demonstrates that this underestimates n when $P < 1/2 - 1/4 \sqrt{2 + 8W^2}$ or $P > 1/2 + 1/4 \sqrt{2 + 8W^2}$ and overestimates n for P between those two values. For the case of interest (a 95% confidence interval with precision of 0.05), this approximation provides an overestimation of n when a sample size greater than 191 is required. Since the sampling plan calls for a minimum sample size of 250, regardless of the value of P, this approximation is acceptable because it also yields an estimate of n larger than the true value. Therefore, for the purposes of the pilot test and subsequent surveys, the following approximate equation can be used to determine whether a sample size larger than 250 is required:

$$n = \frac{Z_c^2}{W^2} P(1 - P)$$

or using 1.96 for Z_c and 0.05 for W,

$$n = 1536.64\ P(1 - P)$$

Data from the pilot test can be used to illustrate the effects of these approximations. In the pilot test, the population of tone alert households from which the sample was to be drawn (N) was approximately 4500 and the observed proportion alerted (P) was 0.675. This yields 311 as the exact result for n. Neglecting the finite population term yields an estimate of 334 for n, and the simplified final approximation estimates n as 338. Thus, the final simplified approximation overestimates the required sample size by 27 in this case.

SOURCE: International Energy Associates Limited. "Analysis of Tone Alert Pilot Test." IEAL-321. September 27, 1983.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	10.00	HARD	0.	NO	0.	0.
74	4000.	225.00	4.00	HARD	0.	NO	0.	0.
75	6000.	225.00	2.00	HARD	0.	NO	0.	0.
76	8000.	225.00	2.00	HARD	0.	NO	0.	0.
77	12000.	225.00	2.00	HARD	0.	NO	0.	0.
78	500.	202.50	11.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	10.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	8.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	4.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	4.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	2.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	2.00	SOFT	0.	NO	0.	0.
85	500.	180.00	11.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	9.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	9.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	9.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	2.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	4.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	4.00	SOFT	0.	NO	0.	0.
92	500.	157.50	11.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	9.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	10.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	5.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	5.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	4.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	4.00	SOFT	0.	NO	0.	0.
99	500.	135.00	10.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	8.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	8.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	13.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	6.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	13.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	7.00	SOFT	0.	NO	0.	0.
106	500.	112.50	11.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	8.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	8.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	3.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	11.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	7.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	7.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #106-CYCLONE
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DOC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-CYCLONE	155.6	157.9	105.0	135.0	121.0	139.0	157.0	146.0	145.0	143.0	144.0

XO= .00 YO= .00 ZO= 10.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #106-CYCLONE
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

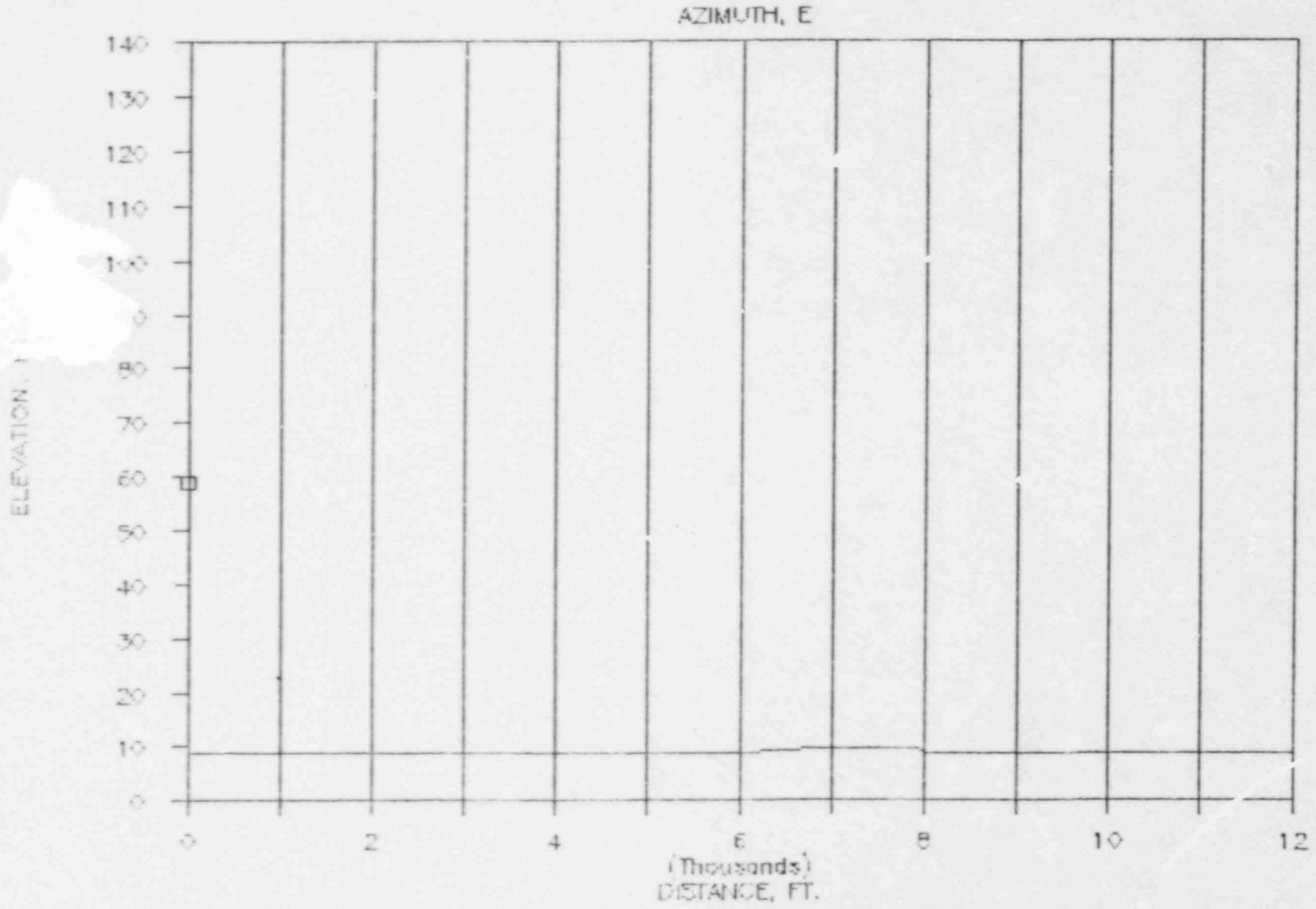
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #106-CYCLONE

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

DISTANCE IN FEET

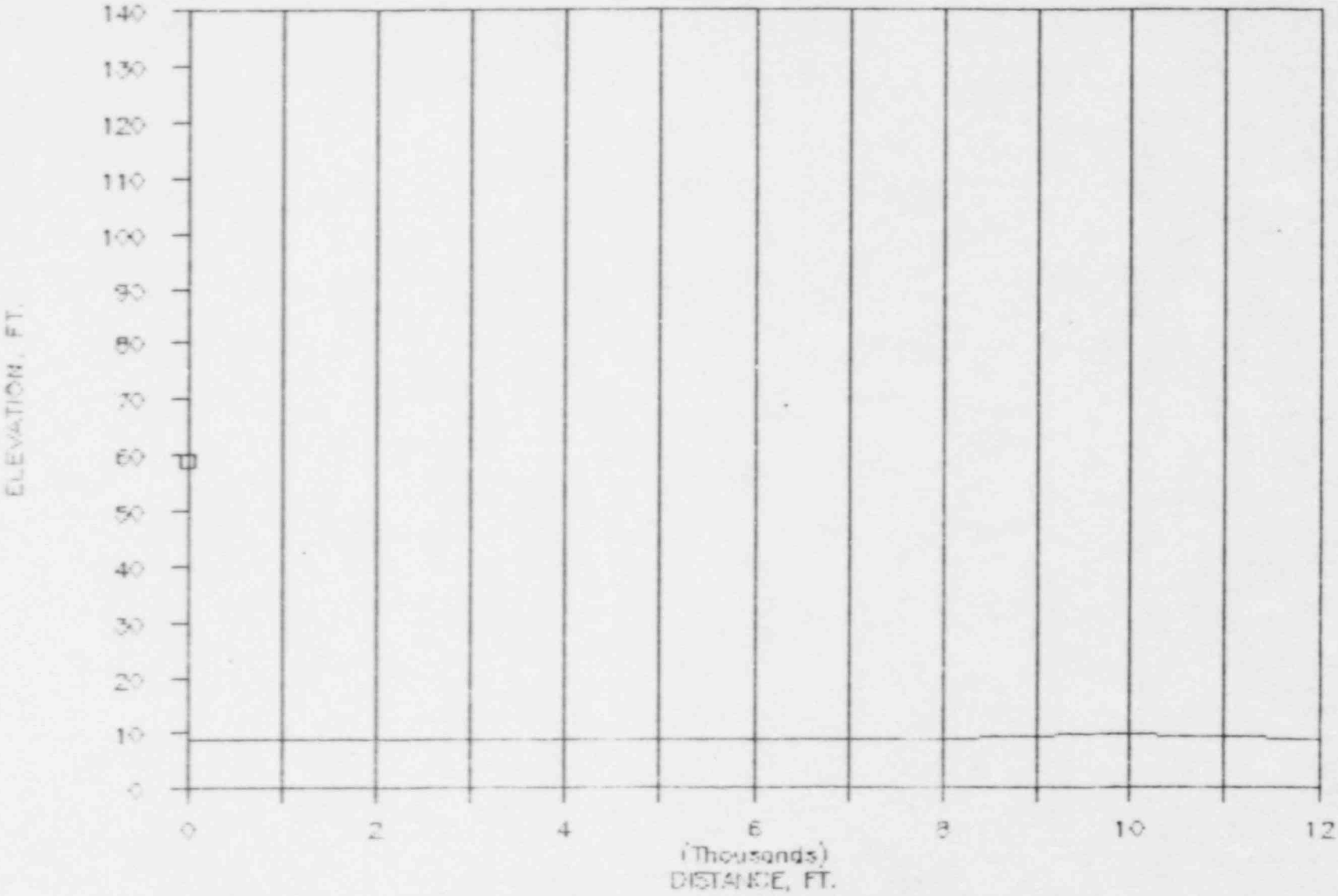
AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	105.	95.	87.	80.	76.	72.	66.
ENE	105.	95.	87.	80.	76.	72.	66.
NE	105.	95.	87.	80.	76.	72.	66.
NNE	105.	95.	81.	65.	56.	51.	44.
N	106.	98.	84.	64.	56.	51.	43.
NNW	106.	98.	83.	63.	55.	50.	42.
NW	106.	98.	83.	63.	55.	50.	42.
WNW	106.	98.	83.	63.	56.	51.	42.
W	106.	99.	85.	65.	58.	51.	43.
WSW	106.	99.	87.	68.	57.	52.	45.
SW	106.	99.	92.	84.	79.	75.	68.
SSW	105.	95.	87.	80.	76.	72.	66.
S	105.	95.	87.	80.	76.	72.	66.
SSE	105.	95.	87.	80.	76.	72.	66.
SE	105.	95.	87.	80.	76.	72.	66.
ESE	105.	95.	87.	80.	76.	72.	66.

ARTIFICIAL ISLAND 108



ARTIFICIAL ISLAND 108

AZIMUTH, 5NE



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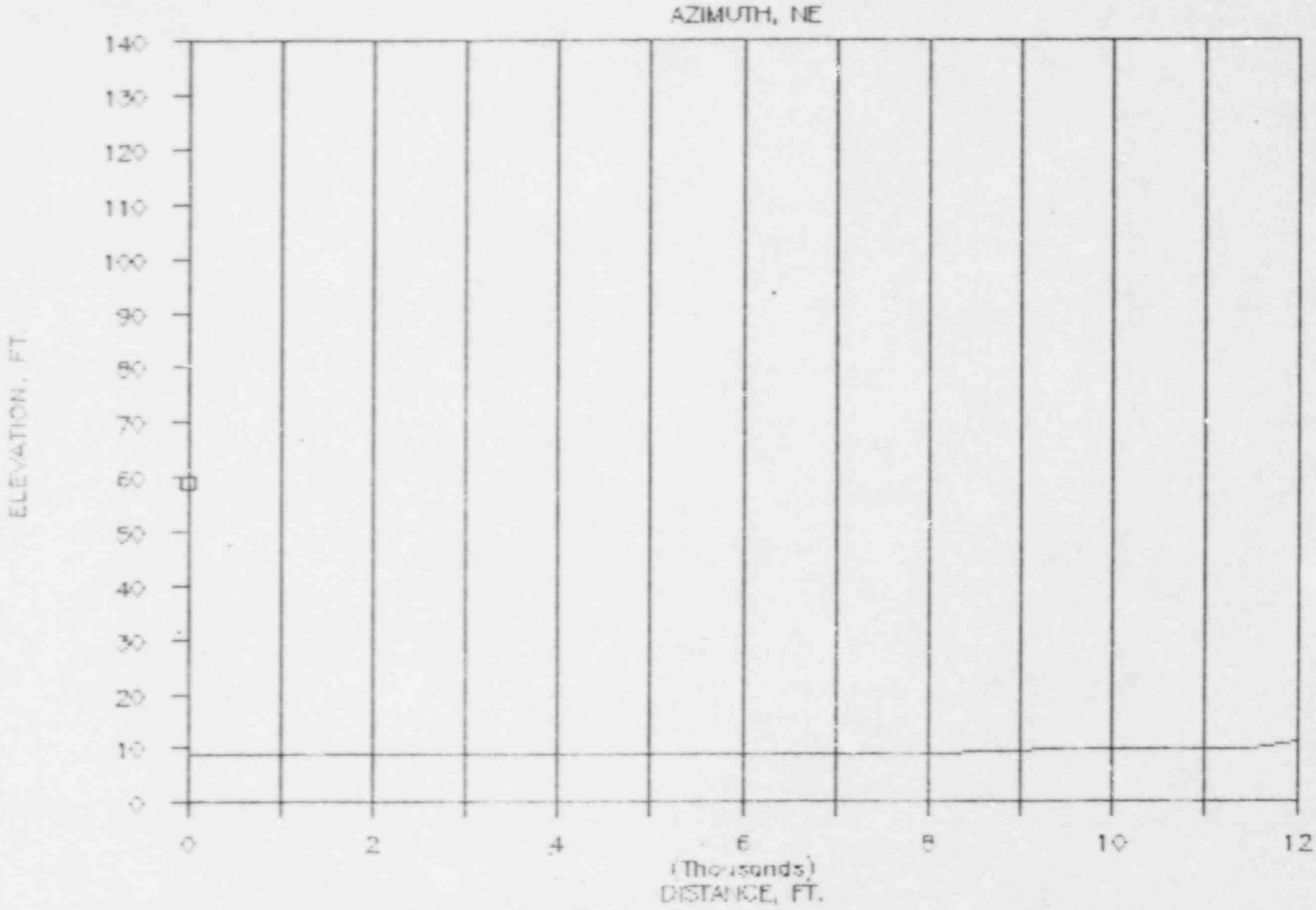

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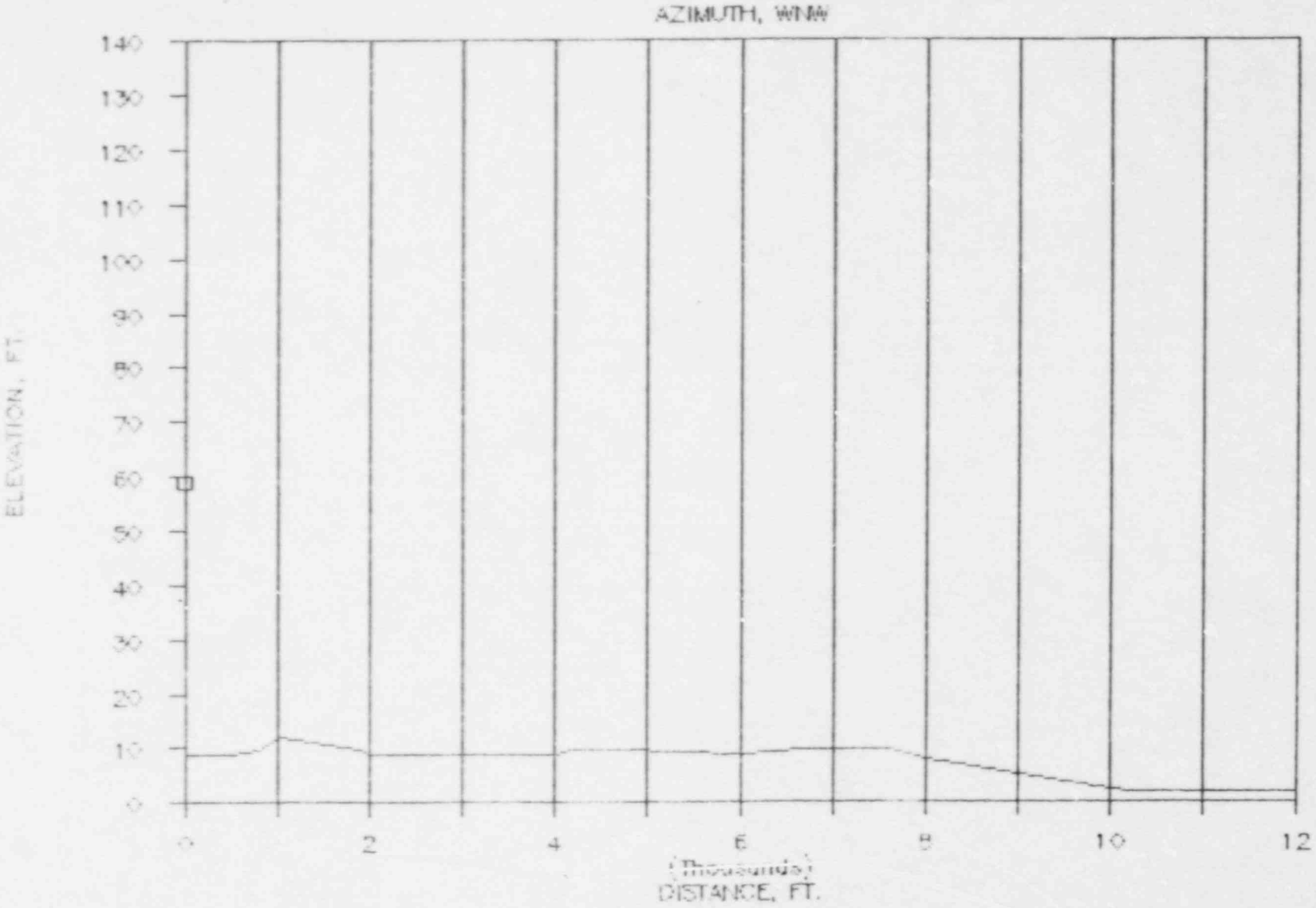

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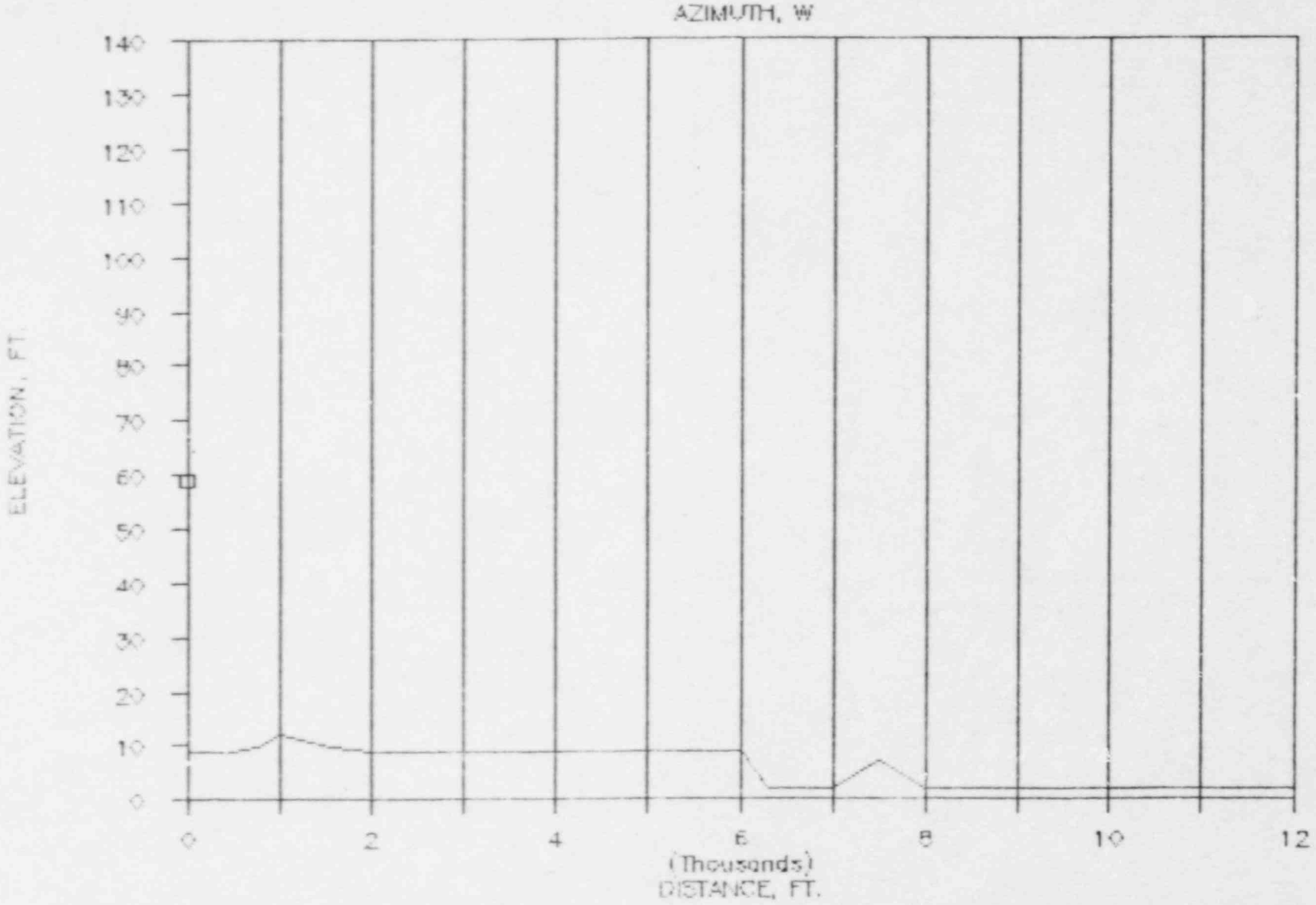

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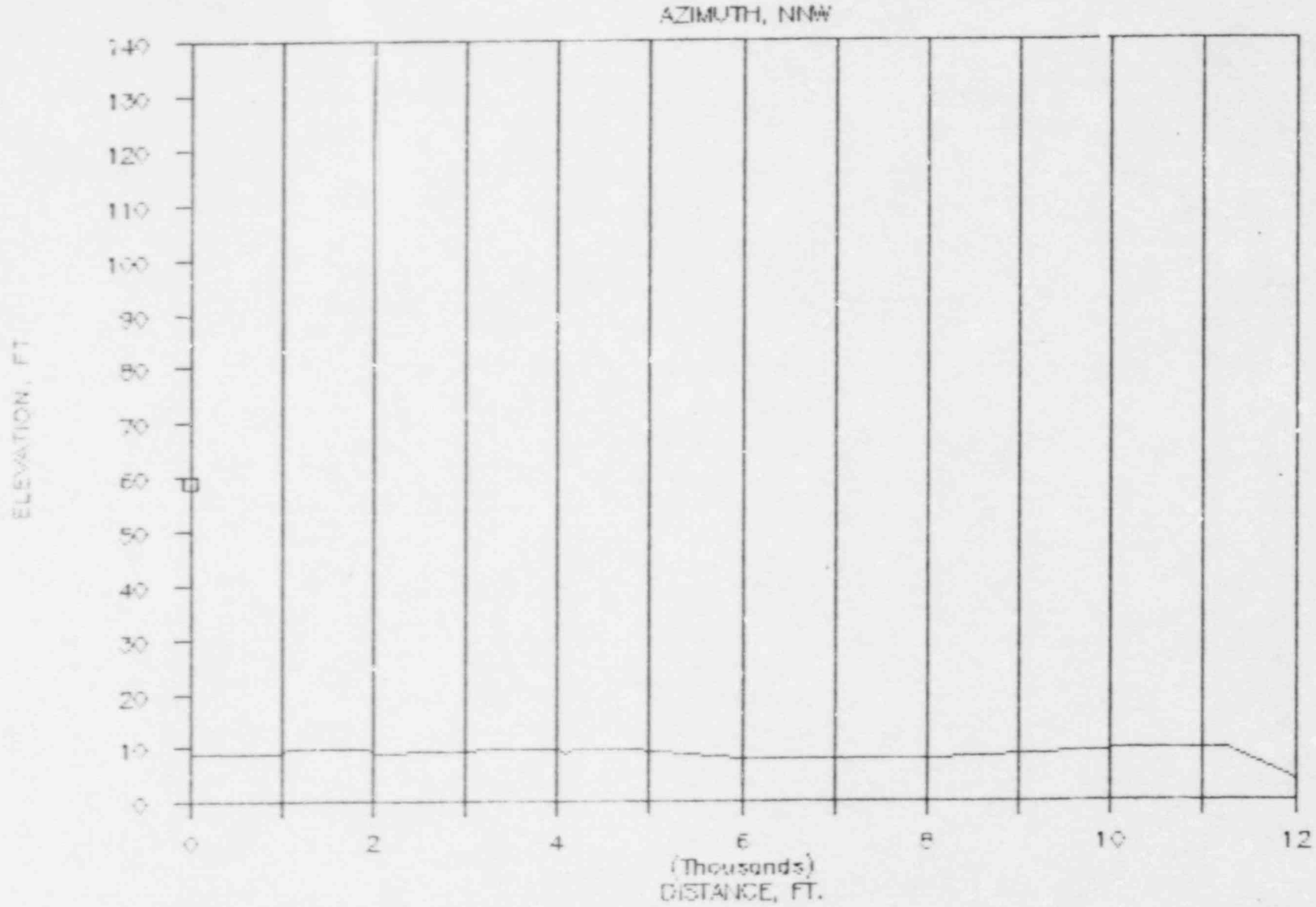

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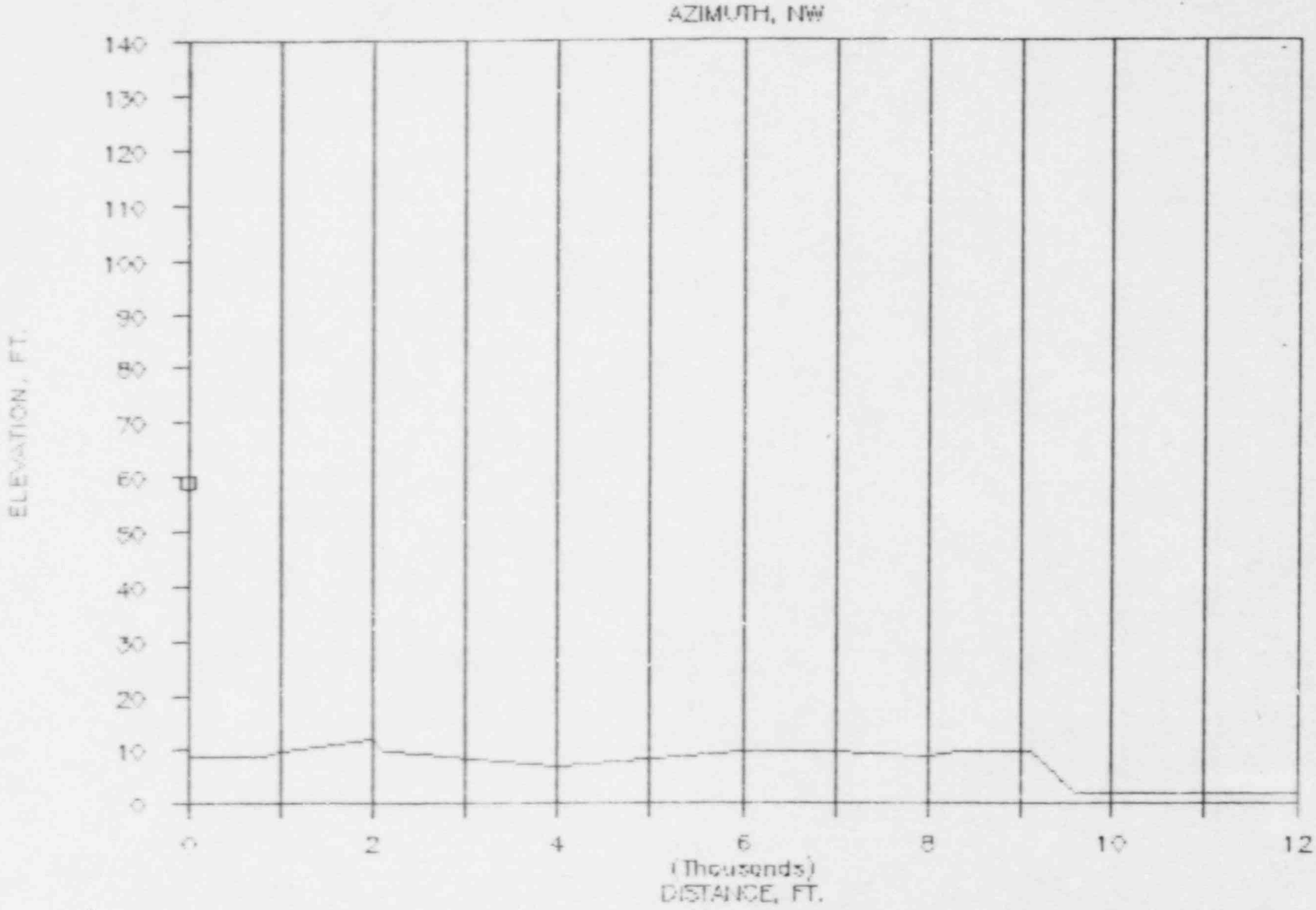

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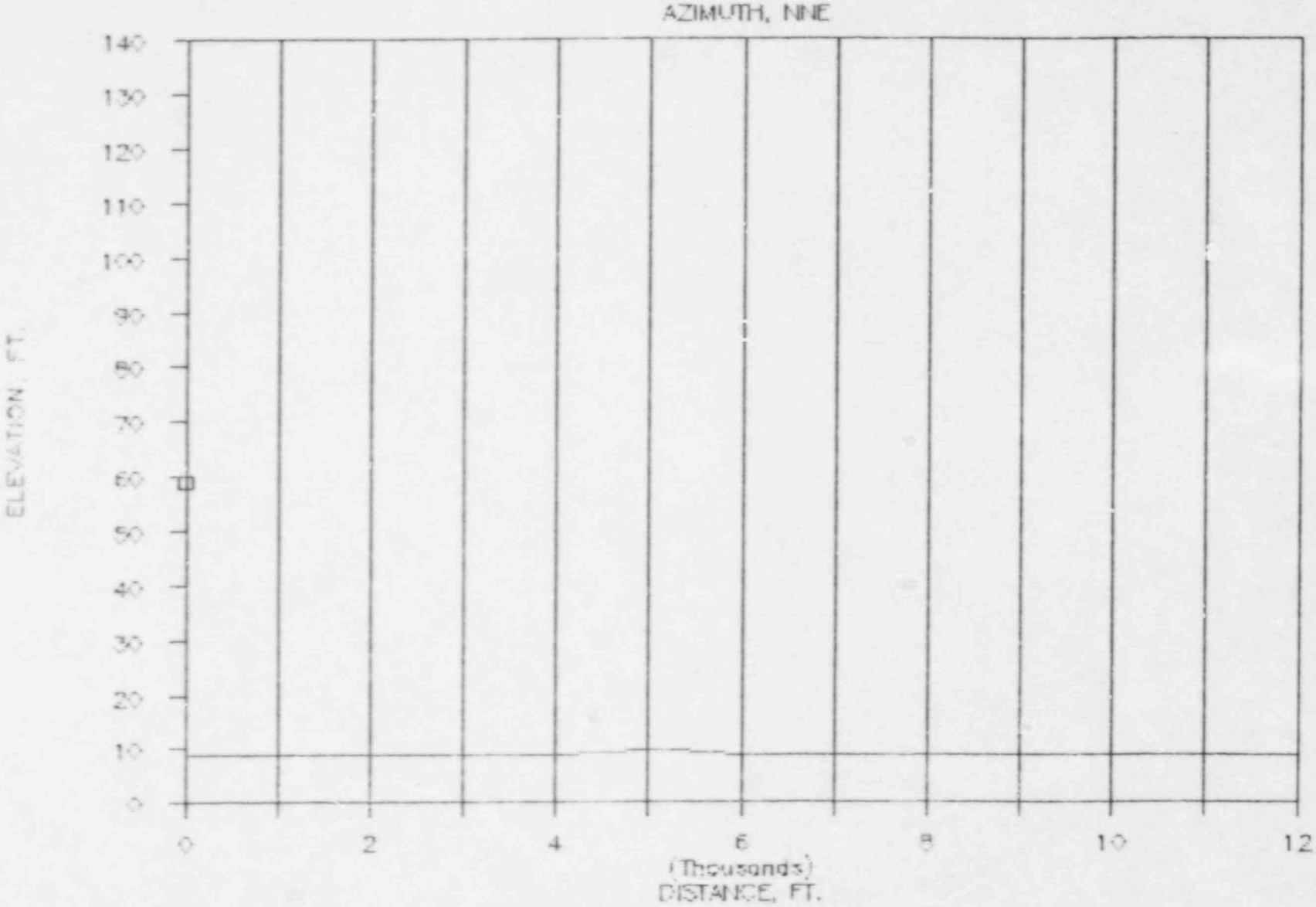

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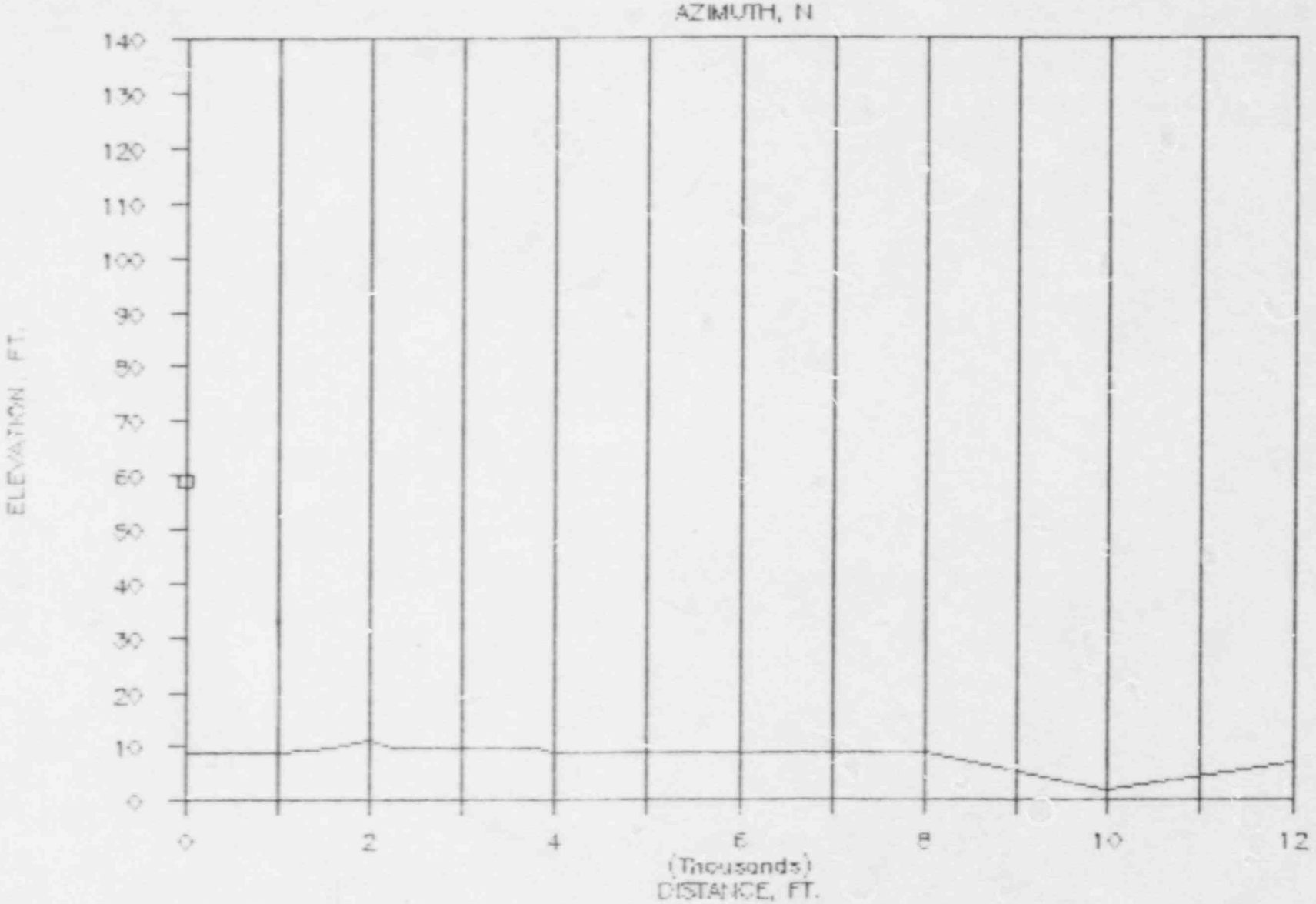
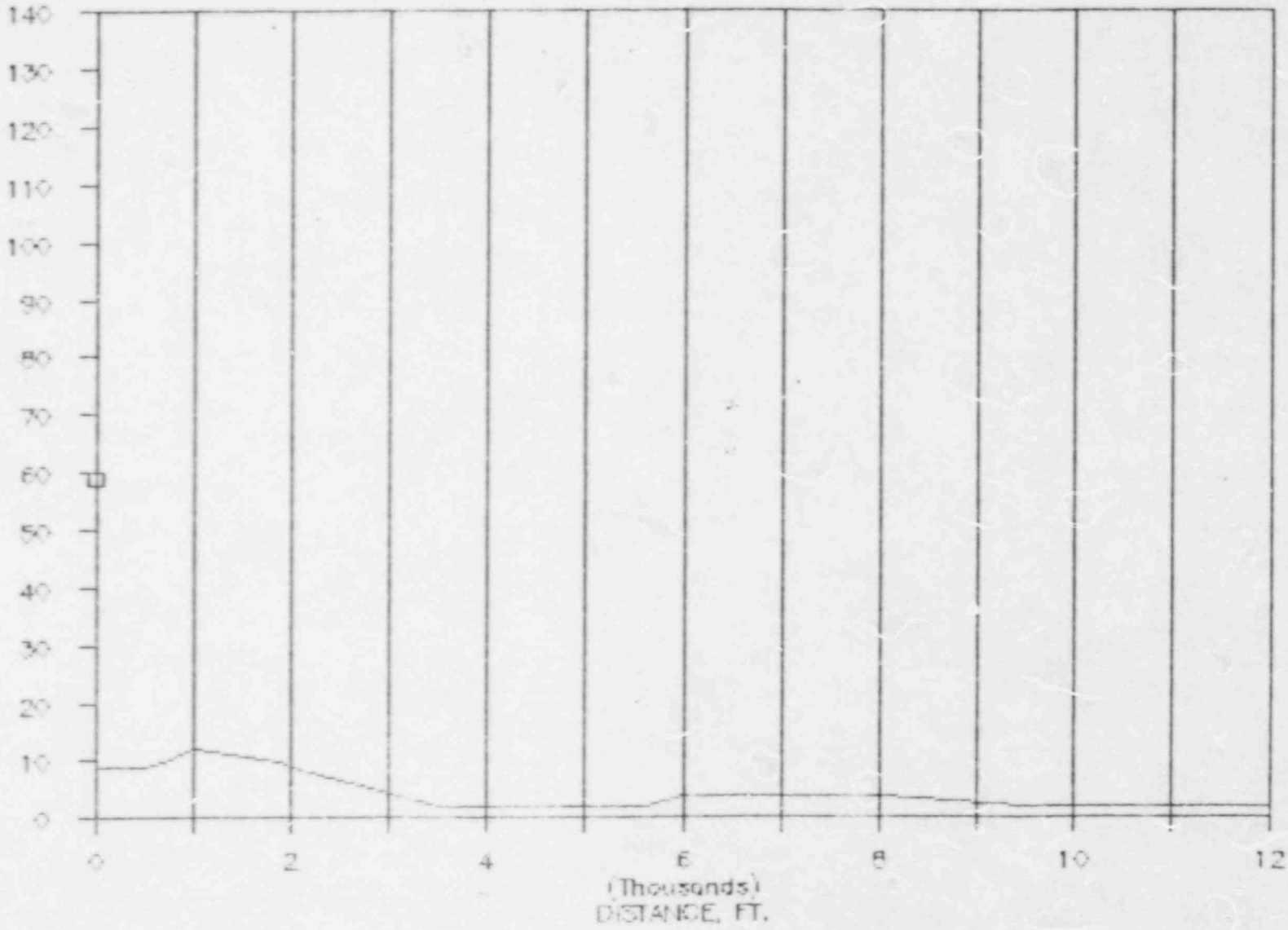


ARTIFICIAL ISLAND 108

AZIMUTH, WSW



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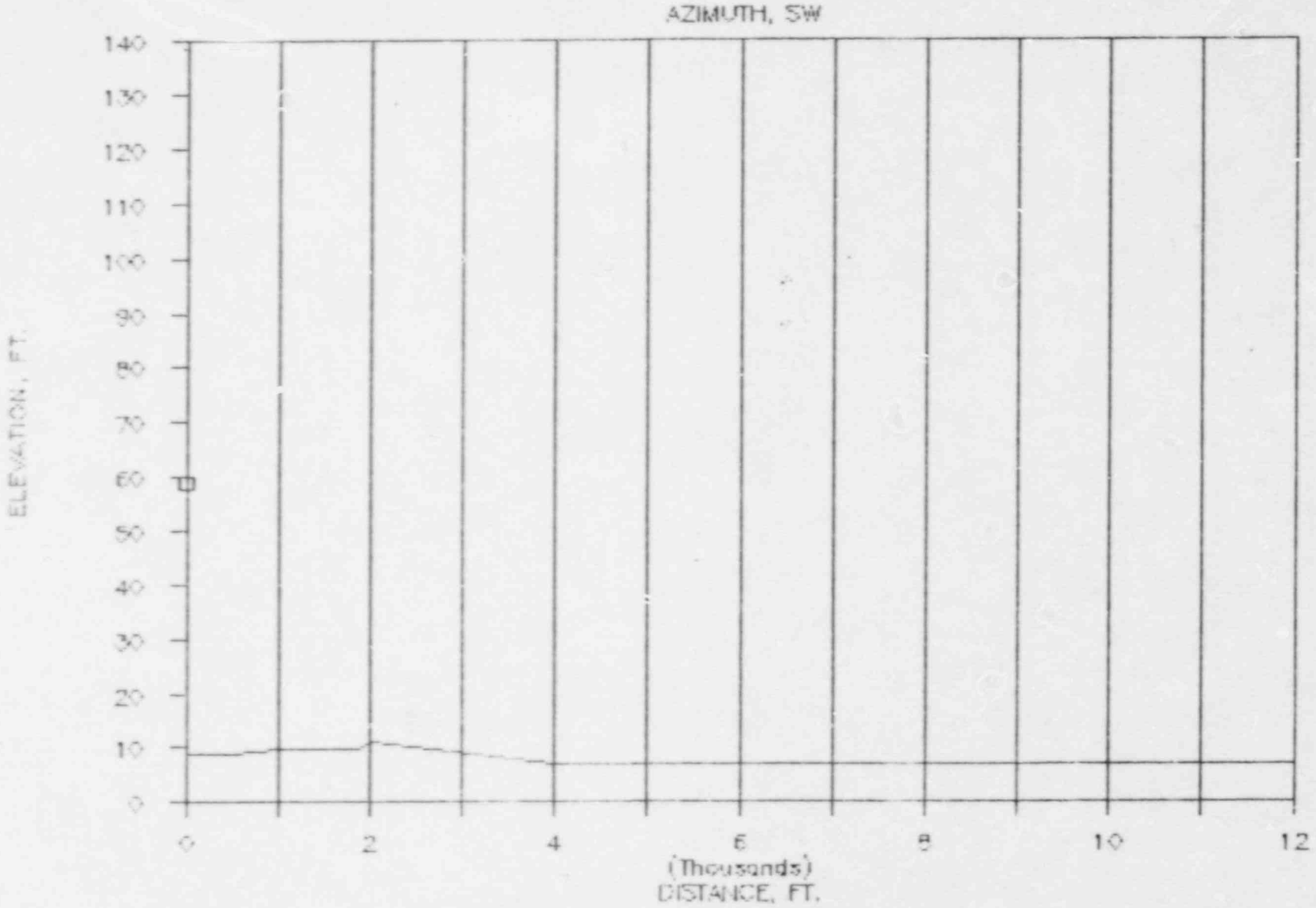

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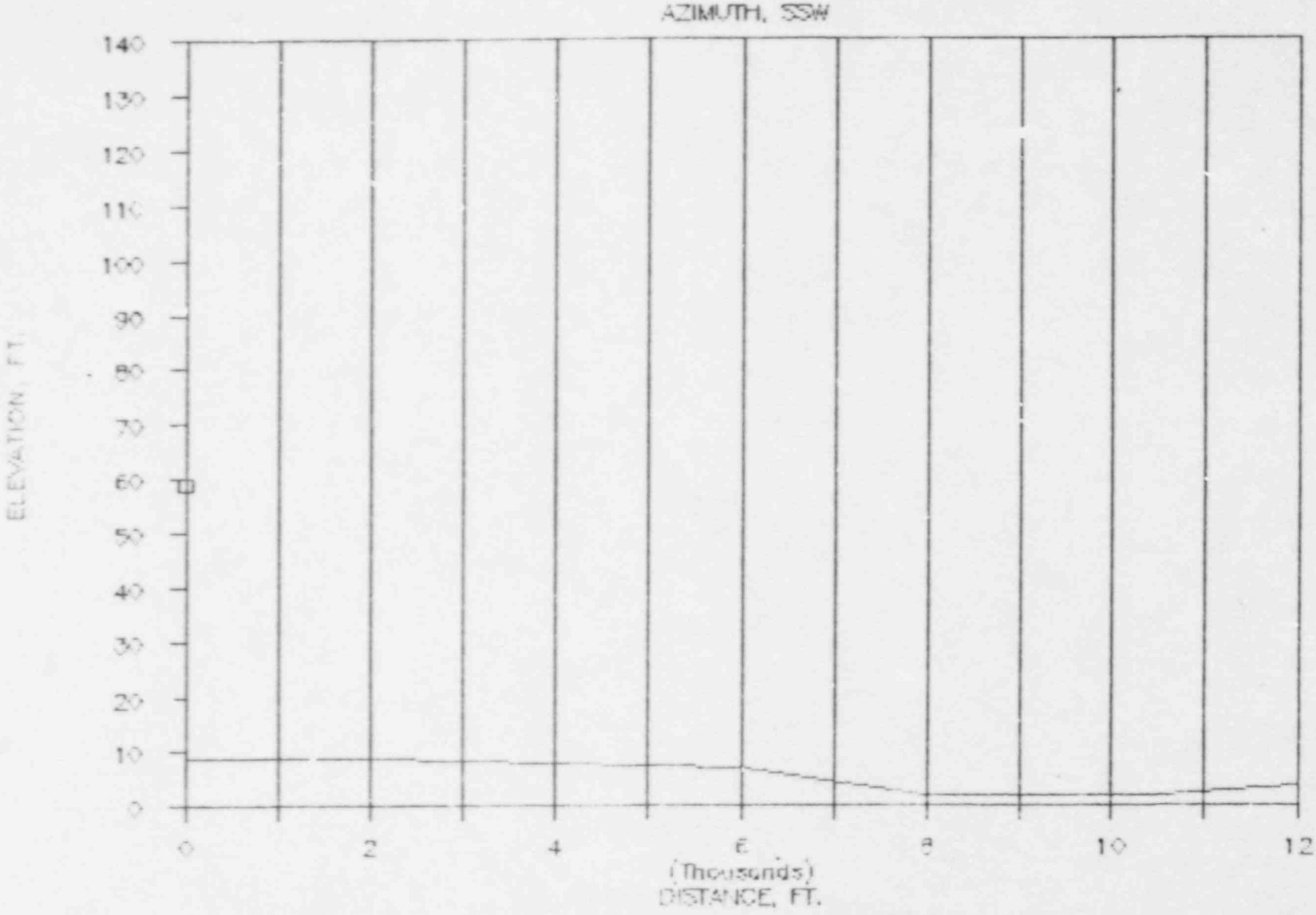
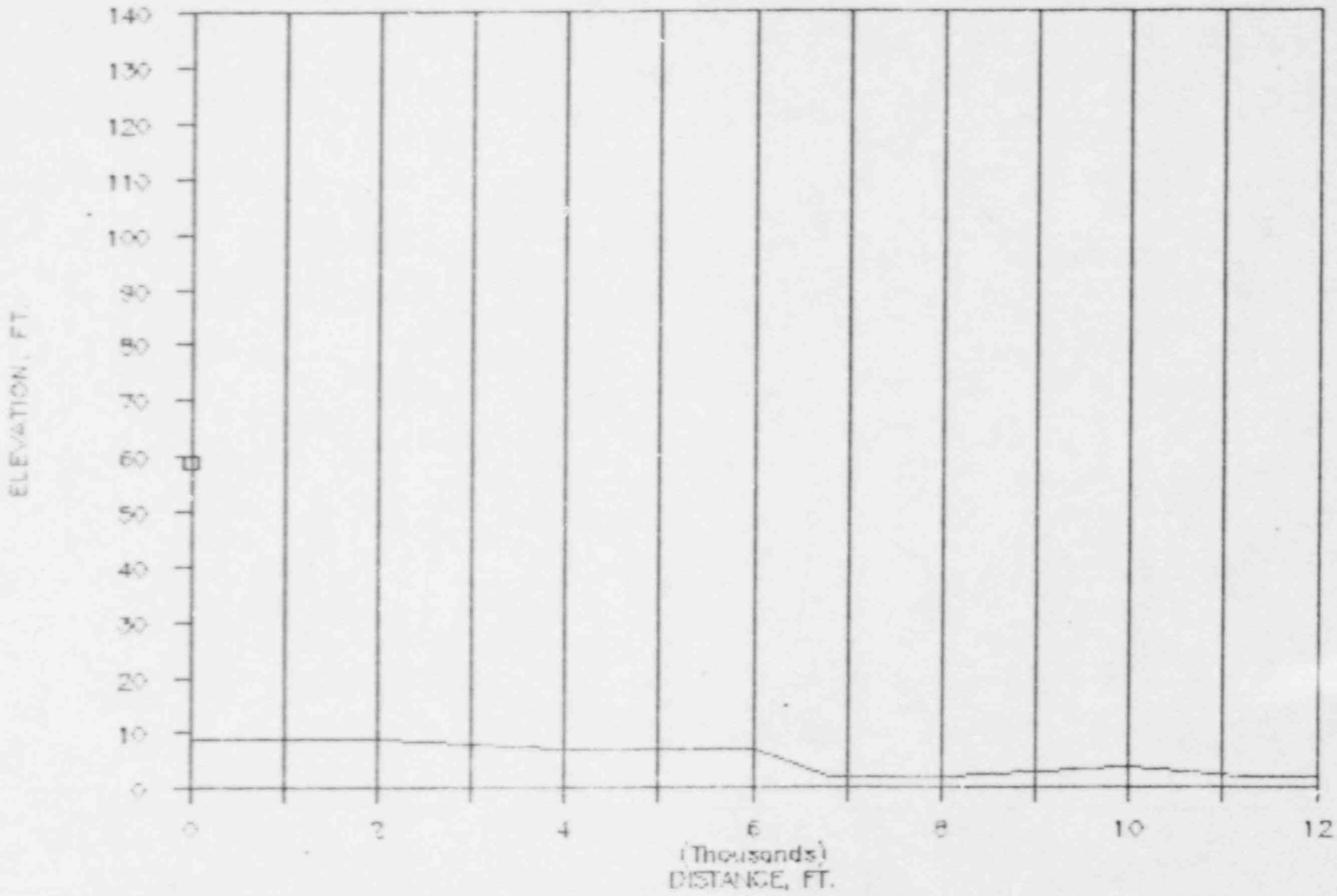


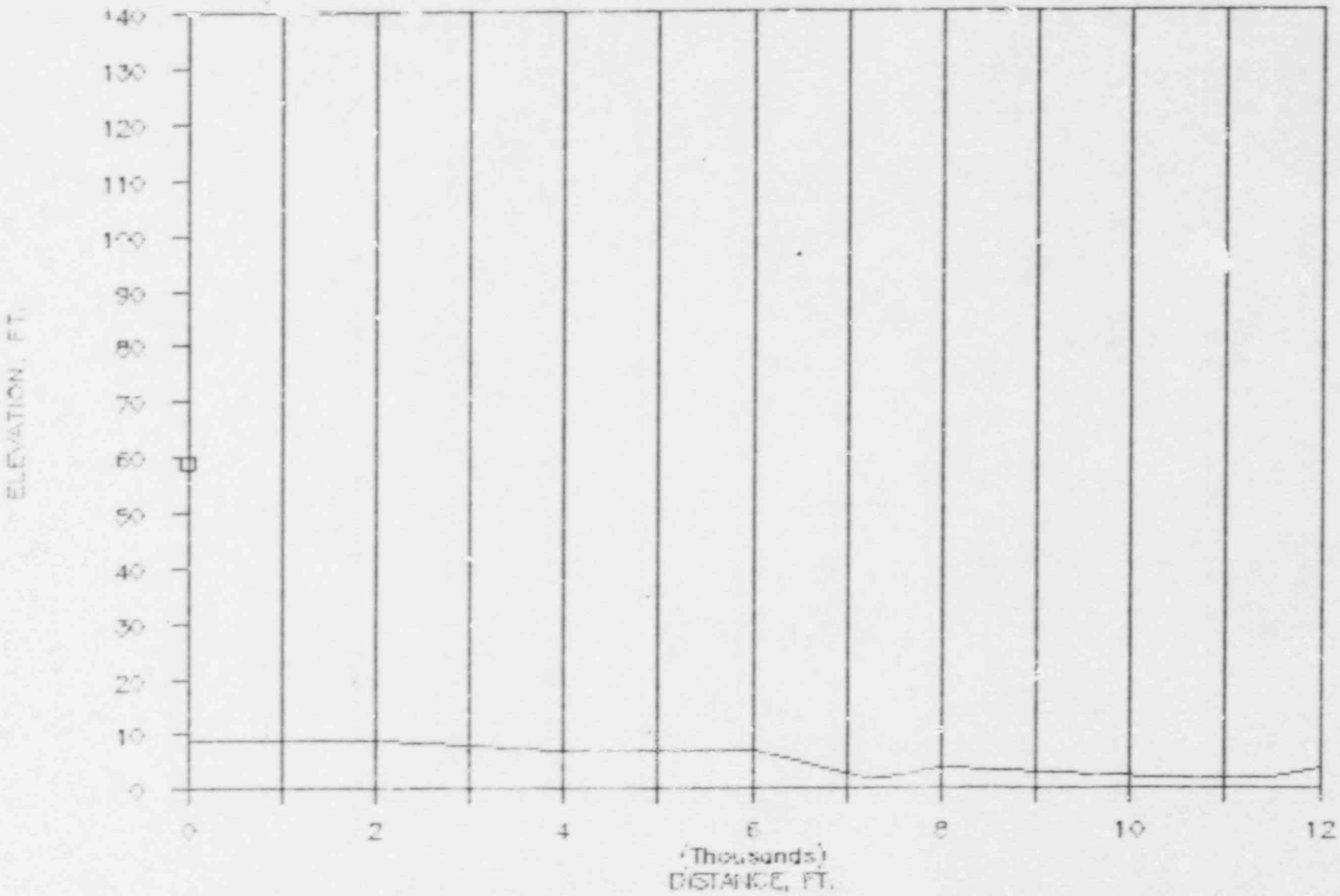
ARTIFICIAL ISLAND 108

AZIMUTH, 5



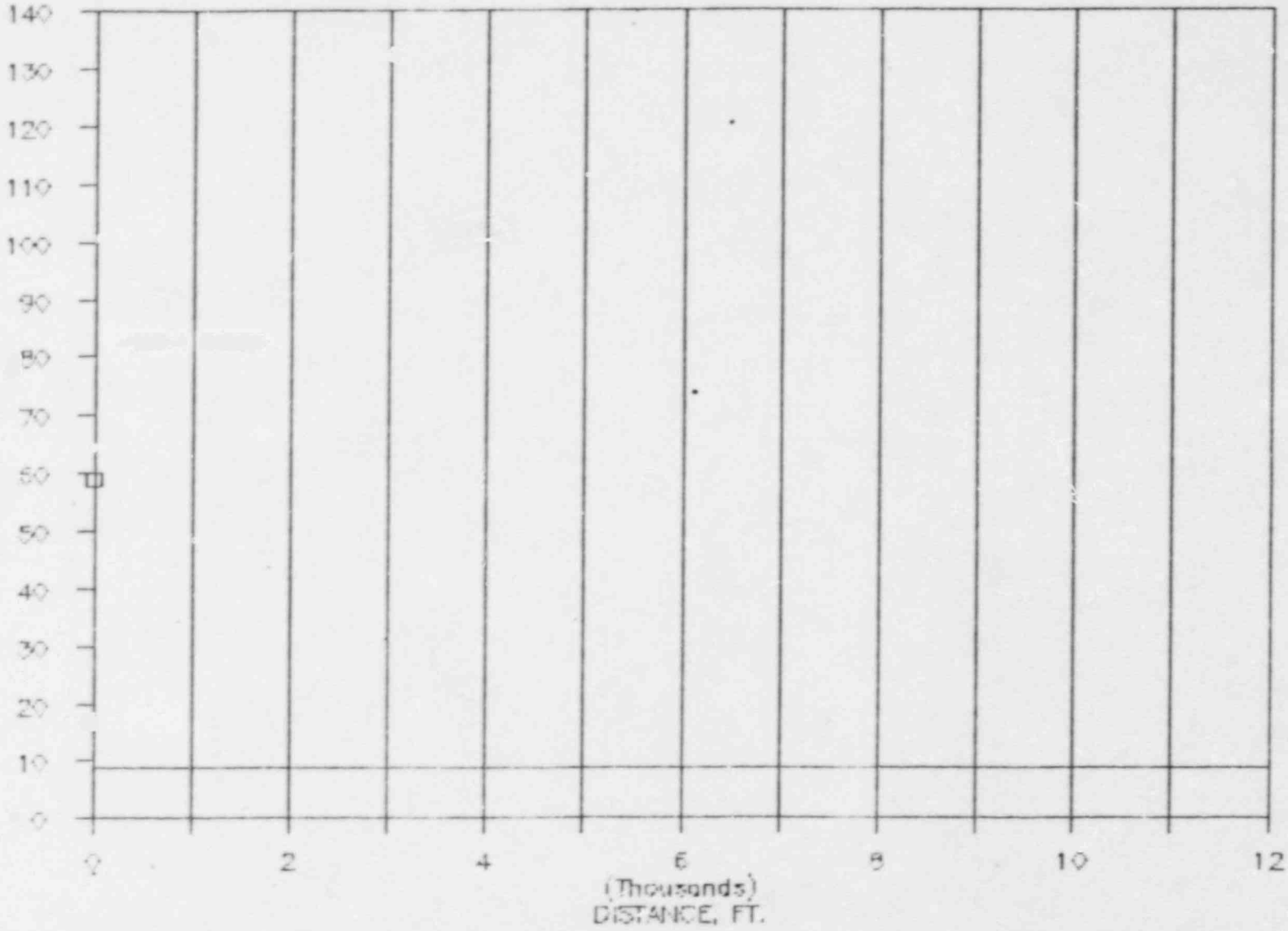
ARTIFICIAL ISLAND 108

AZIMUTH, SSE

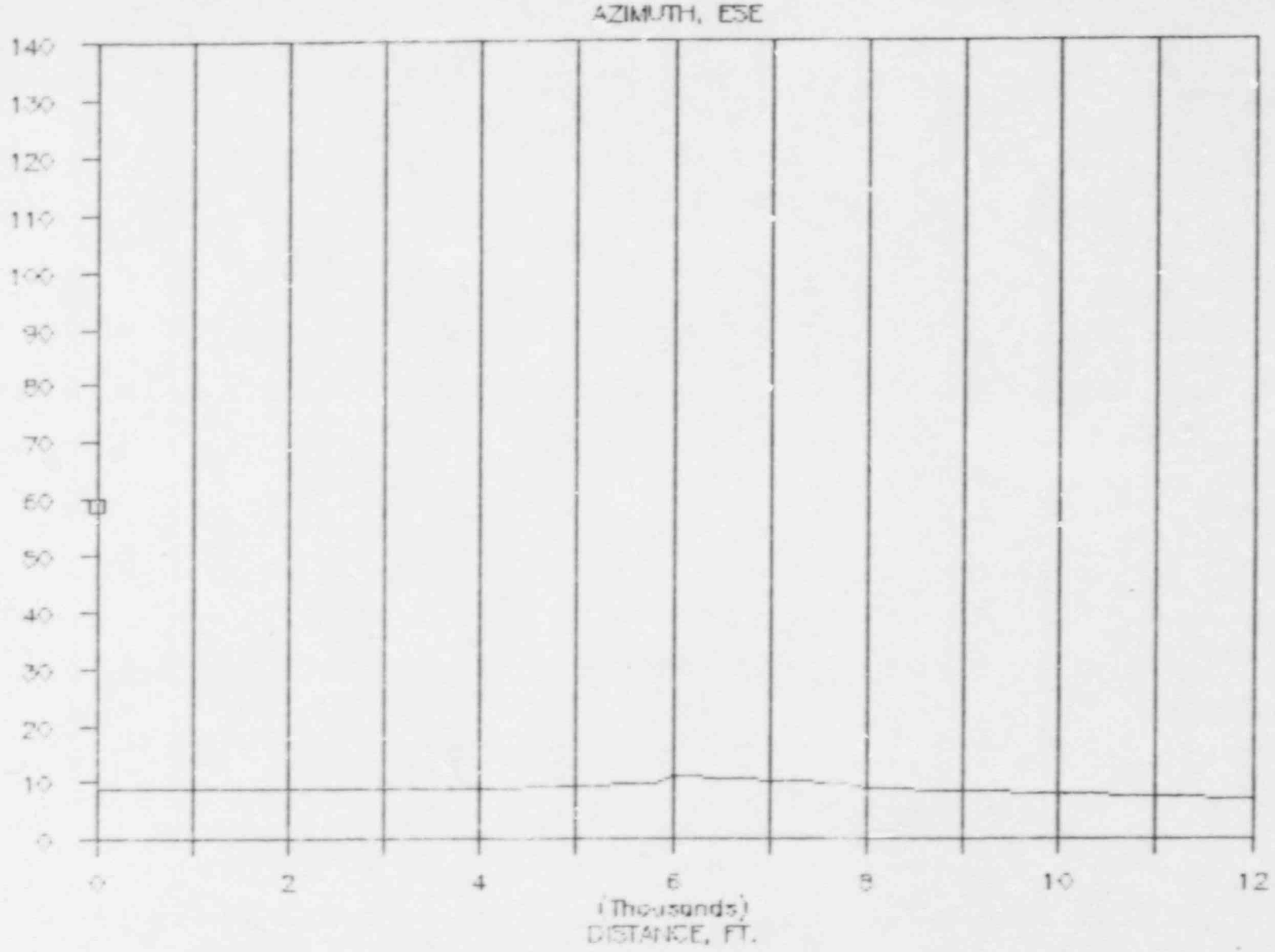


ARTIFICIAL ISLAND 108

AZIMUTH, SE



ARTIFICIAL ISLAND 108



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #108-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	9.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	9.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	9.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	9.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	9.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	9.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	9.00	SOFT	0.	NO	0.	0.
8	500.	67.50	9.00	SOFT	0.	NO	0.	0.
9	1000.	67.50	9.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	9.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	9.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	9.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	9.00	SOFT	0.	NO	0.	0.
14	12000.	67.50	9.00	SOFT	0.	NO	0.	0.
15	500.	45.00	9.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	9.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	9.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	9.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	9.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	9.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	11.00	SOFT	0.	NO	0.	0.
22	500.	22.50	9.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	9.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	9.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	9.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	9.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	9.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	9.00	SOFT	0.	NO	0.	0.
29	500.	.00	9.00	SOFT	0.	NO	0.	0.
30	1000.	.00	9.00	SOFT	0.	NO	0.	0.
31	2000.	.00	11.00	SOFT	0.	NO	0.	0.
32	4000.	.00	9.00	SOFT	0.	NO	0.	0.
33	6000.	.00	9.00	SOFT	0.	NO	0.	0.
34	8000.	.00	9.00	SOFT	0.	NO	0.	0.
35	12000.	.00	7.00	SOFT	0.	NO	0.	0.
36	500.	337.50	9.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	9.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	9.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	10.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	8.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	8.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	4.00	SOFT	0.	NO	0.	0.
43	500.	315.00	9.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	10.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	12.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	7.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	10.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	9.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	2.00	SOFT	0.	NO	0.	0.
50	500.	292.50	9.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	12.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	9.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	9.00	SOFT	0.	NO	0.	0.
54	6000.	292.50	9.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	8.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	2.00	SOFT	0.	NO	0.	0.
57	500.	270.00	9.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	12.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	9.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	9.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	9.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	2.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	2.00	SOFT	0.	NO	0.	0.
64	500.	247.50	9.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	12.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	9.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	2.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	4.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	4.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	2.00	SOFT	0.	NO	0.	0.
71	500.	225.00	9.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	10.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	11.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	7.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	7.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	7.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	7.00	SOFT	0.	NO	0.	0.
78	500.	202.50	9.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	9.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	9.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	8.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	7.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	2.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	4.00	SOFT	0.	NO	0.	0.
85	500.	180.00	9.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	9.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	9.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	7.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	7.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	2.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	2.00	SOFT	0.	NO	0.	0.
92	500.	157.50	9.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	9.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	9.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	7.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	7.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	4.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	4.00	SOFT	0.	NO	0.	0.
99	500.	135.00	9.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	9.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	9.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	9.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	9.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	9.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	9.00	SOFT	0.	NO	0.	0.
106	500.	112.50	9.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	9.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	9.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	9.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	11.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	9.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	7.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #108-PEN10
NUISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 9.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #108-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

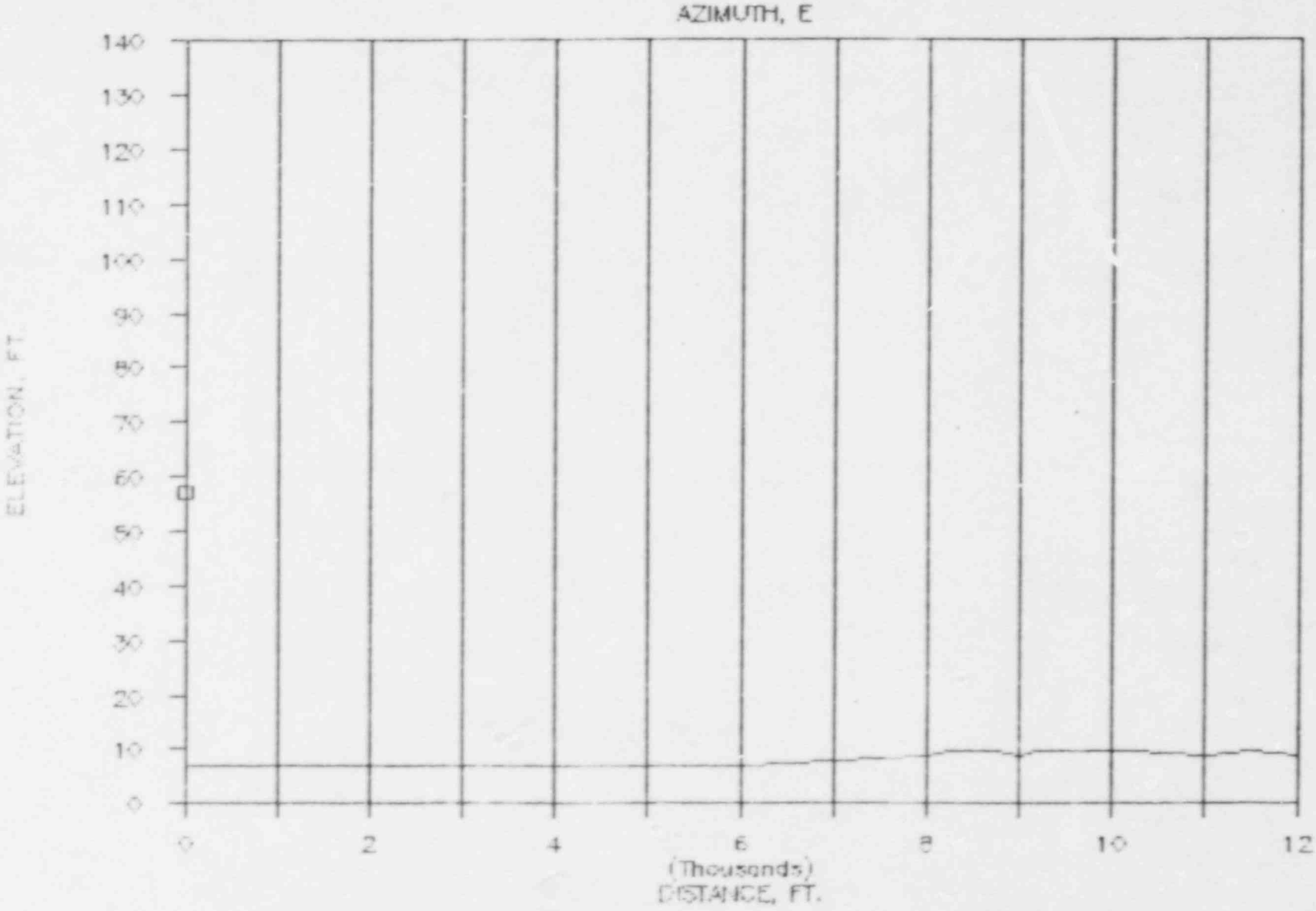
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #108-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

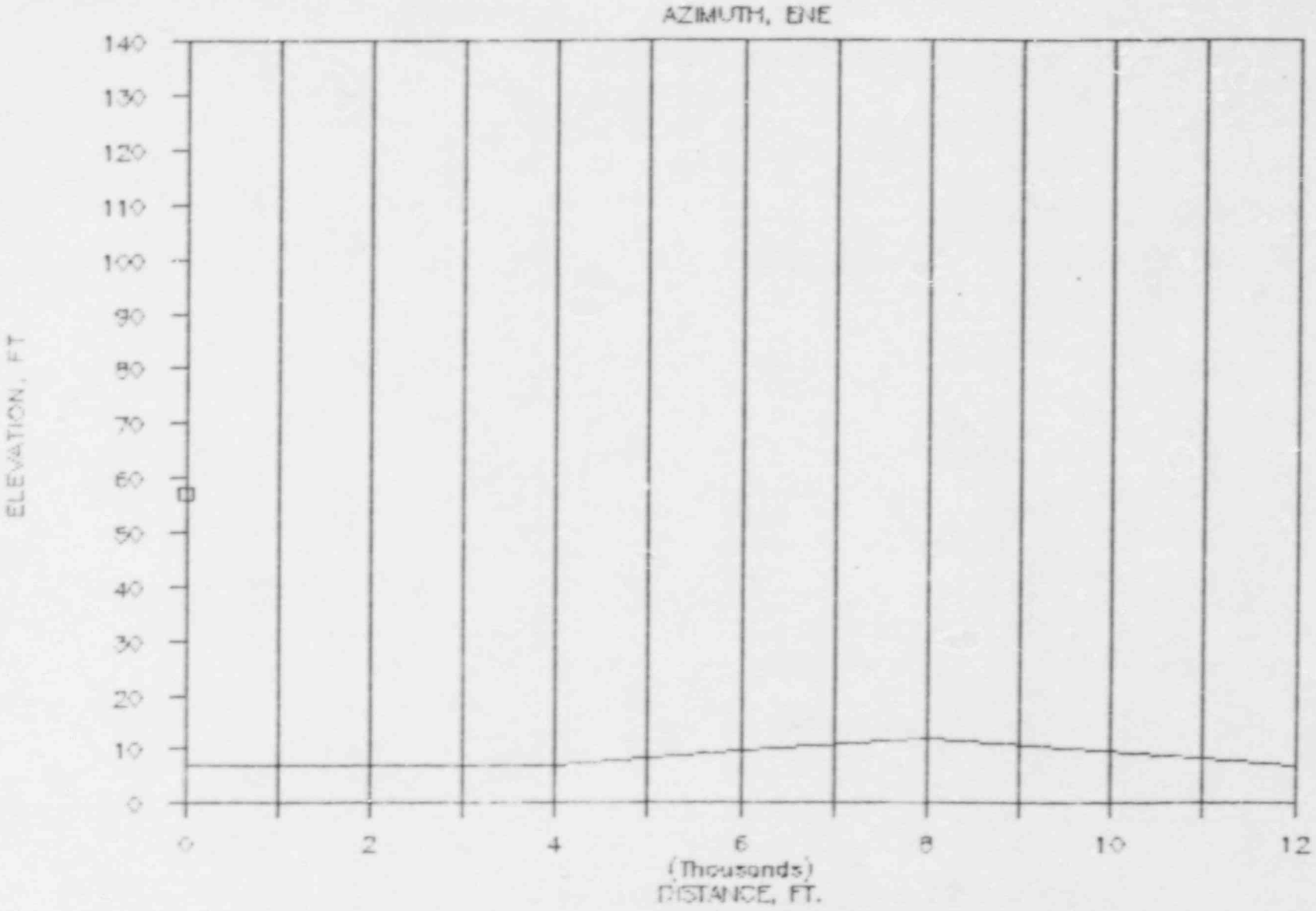
DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	72.	66.
NE	107.	97.	87.	80.	76.	72.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	80.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	80.	76.	72.	66.
SSW	107.	97.	87.	80.	76.	72.	66.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	76.	72.	66.
ESE	107.	97.	87.	80.	76.	72.	66.

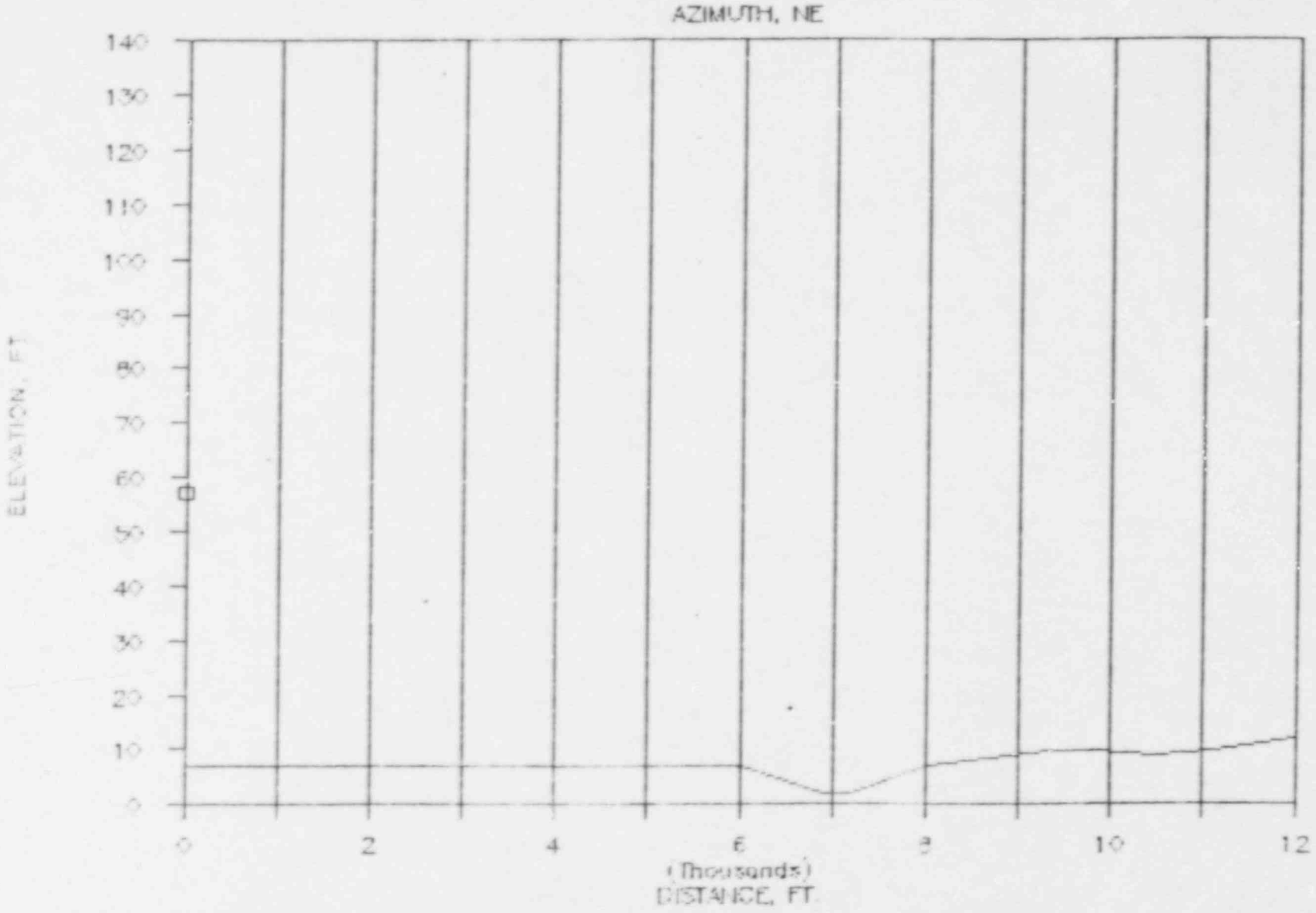
ARTIFICIAL ISLAND 118



ARTIFICIAL ISLAND 118

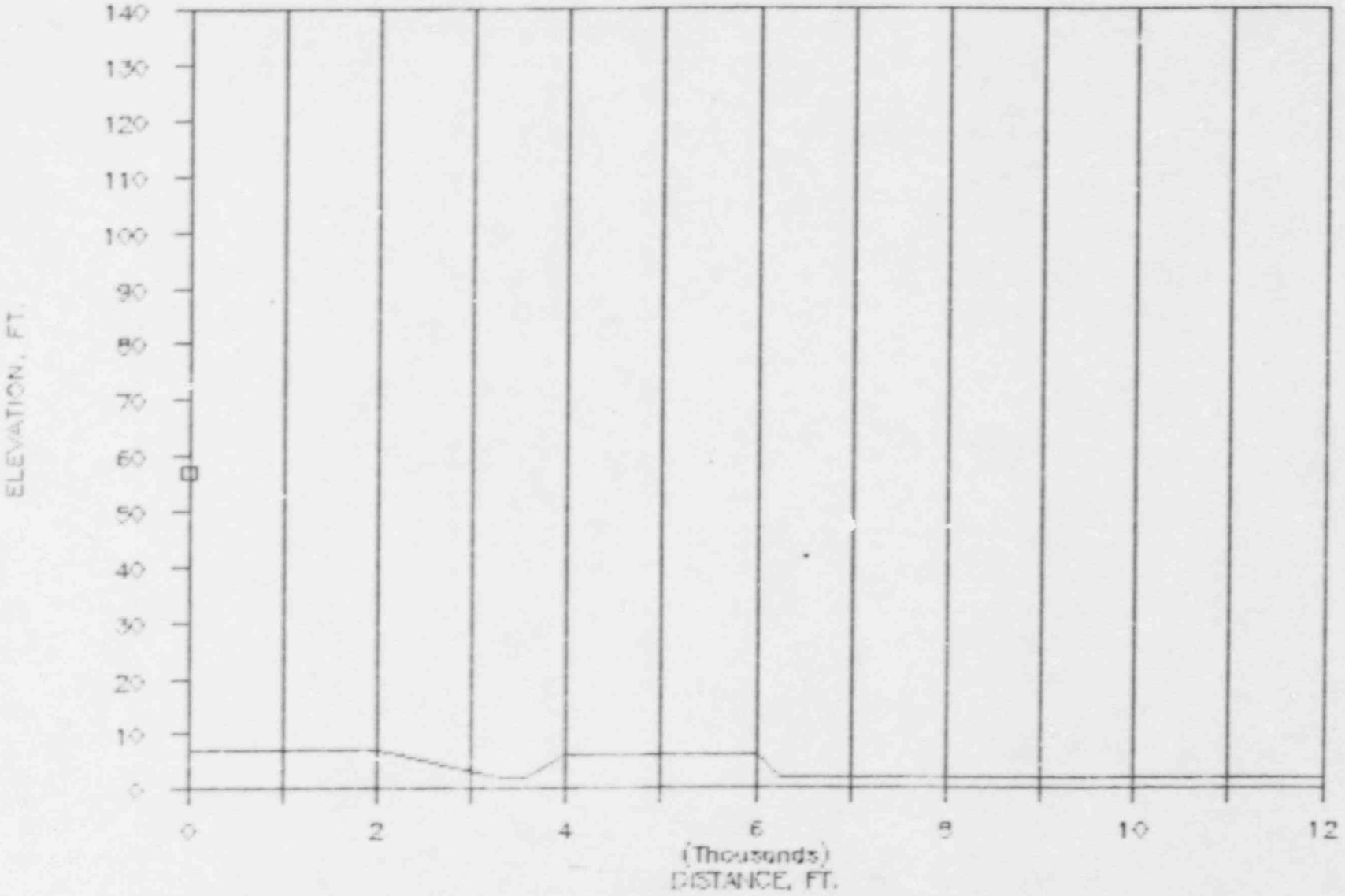


ARTIFICIAL ISLAND 118

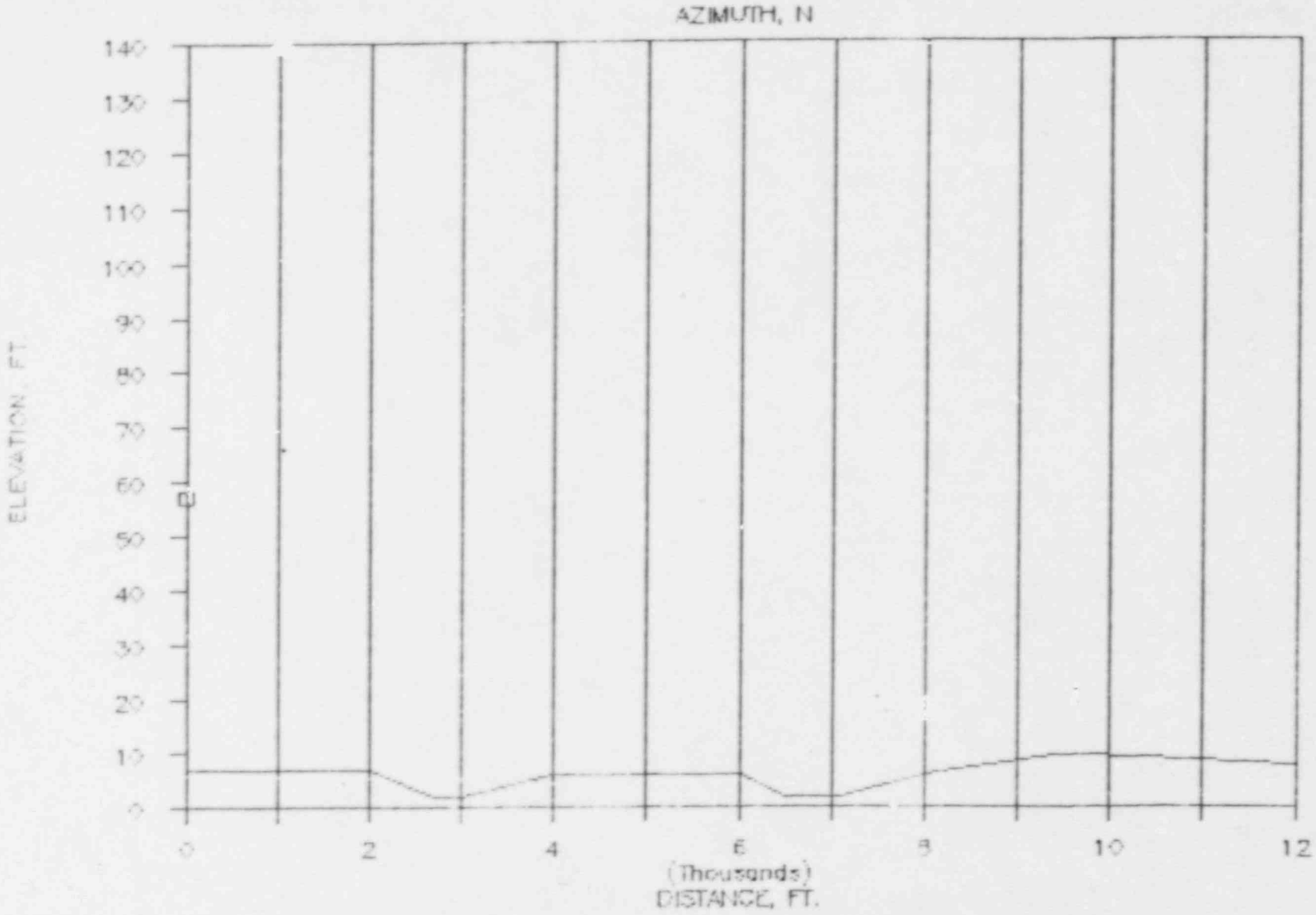


ARTIFICIAL ISLAND 118

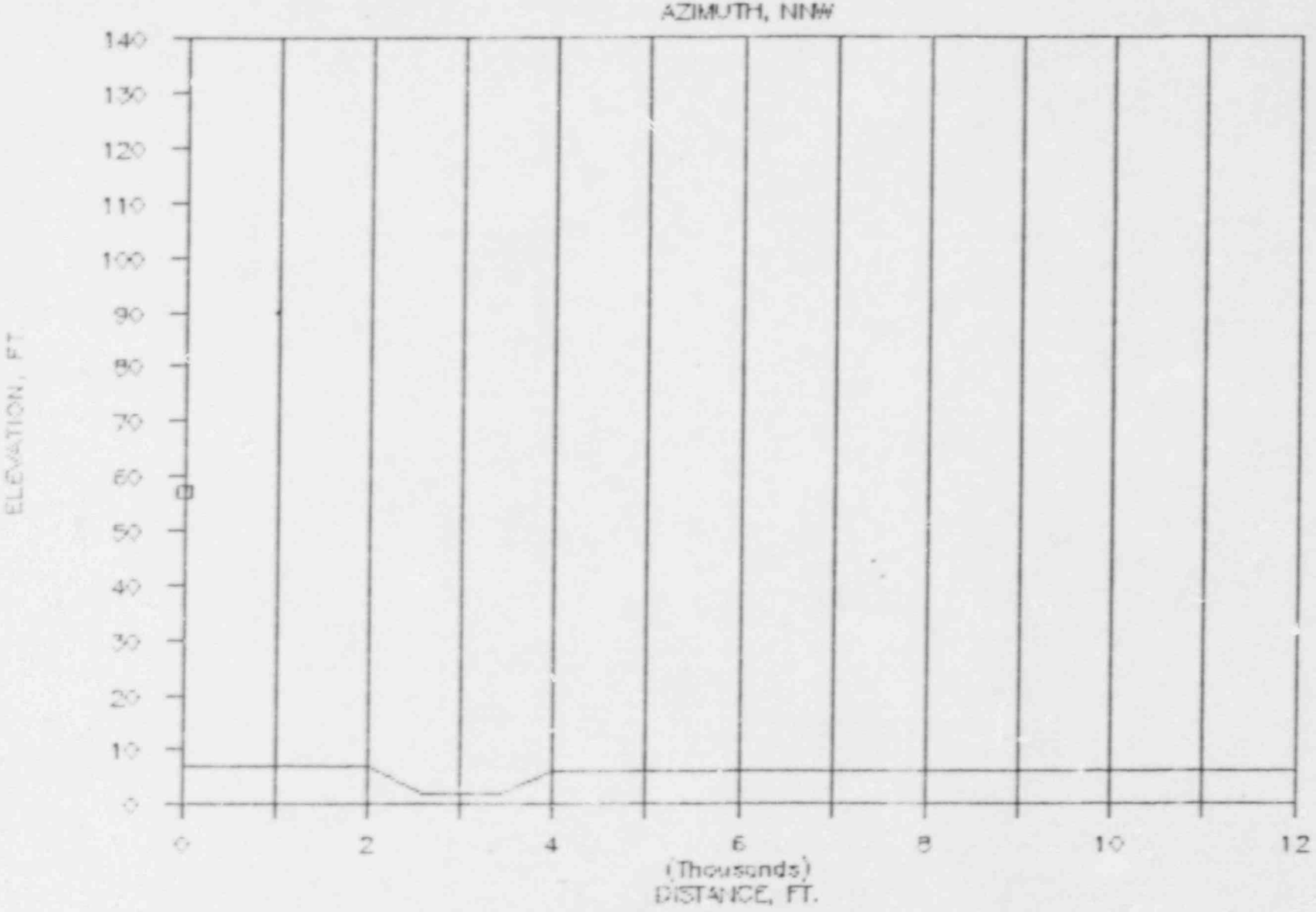
AZIMUTH, NINE



ARTIFICIAL ISLAND 118



ARTIFICIAL ISLAND 118



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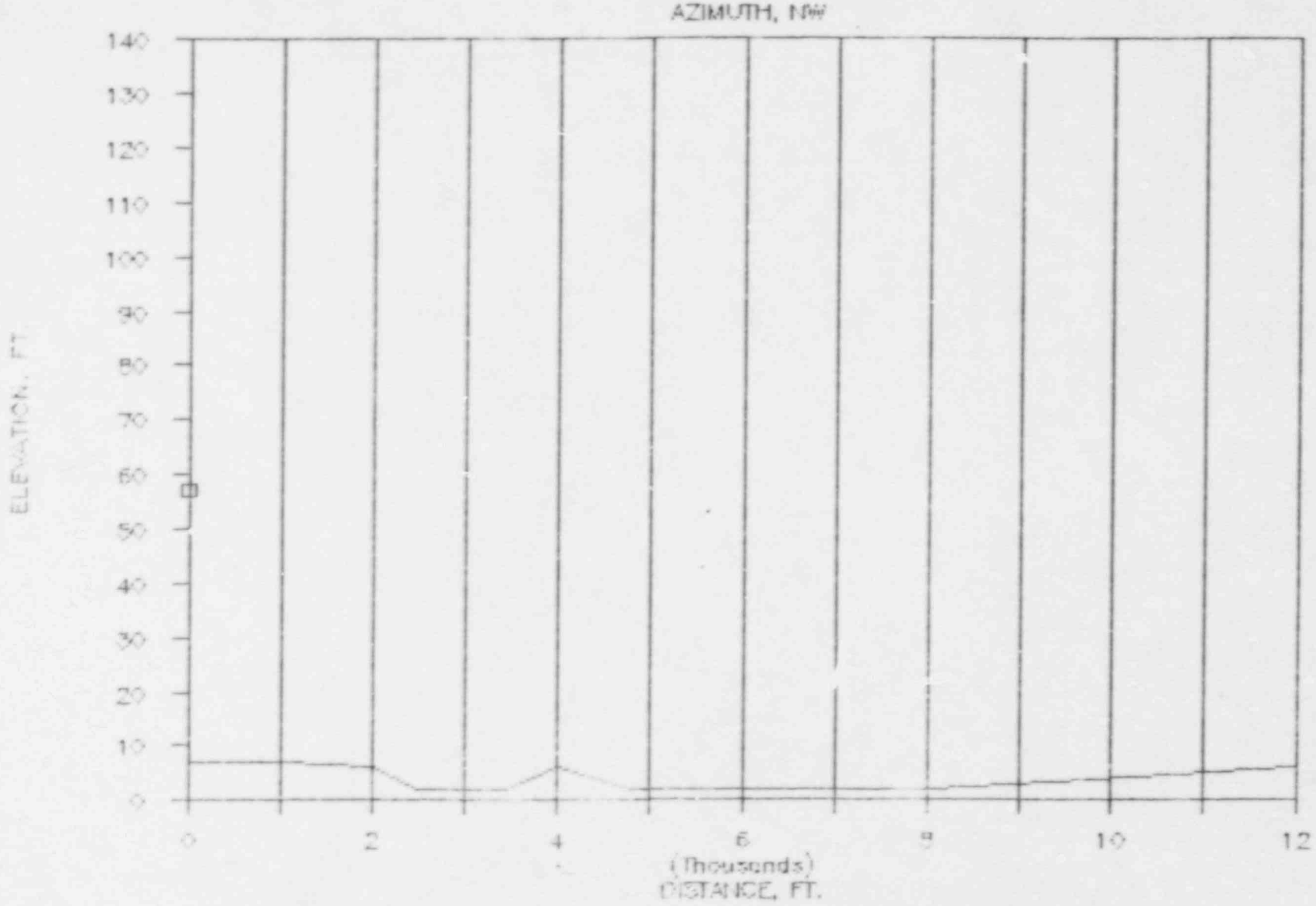

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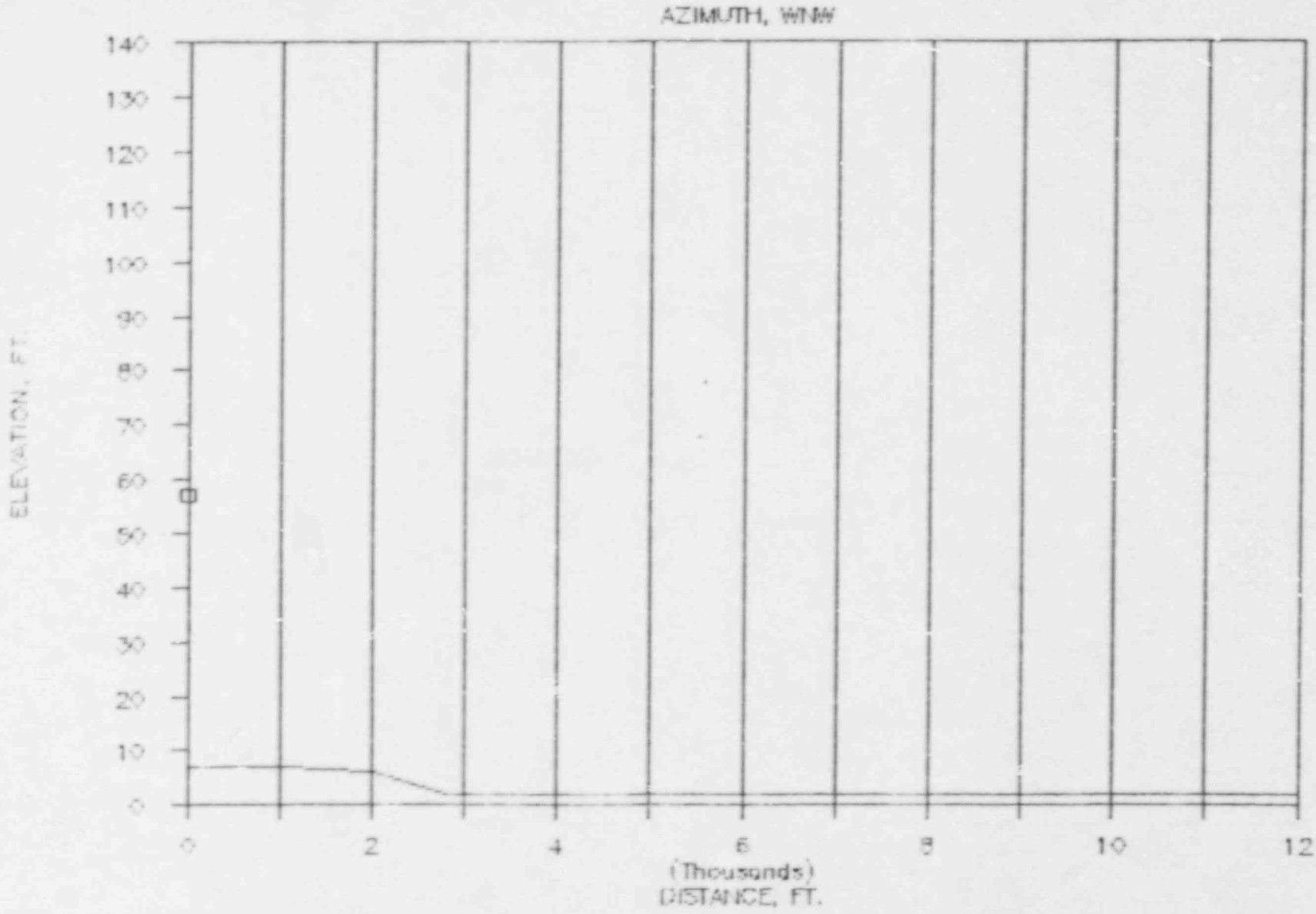

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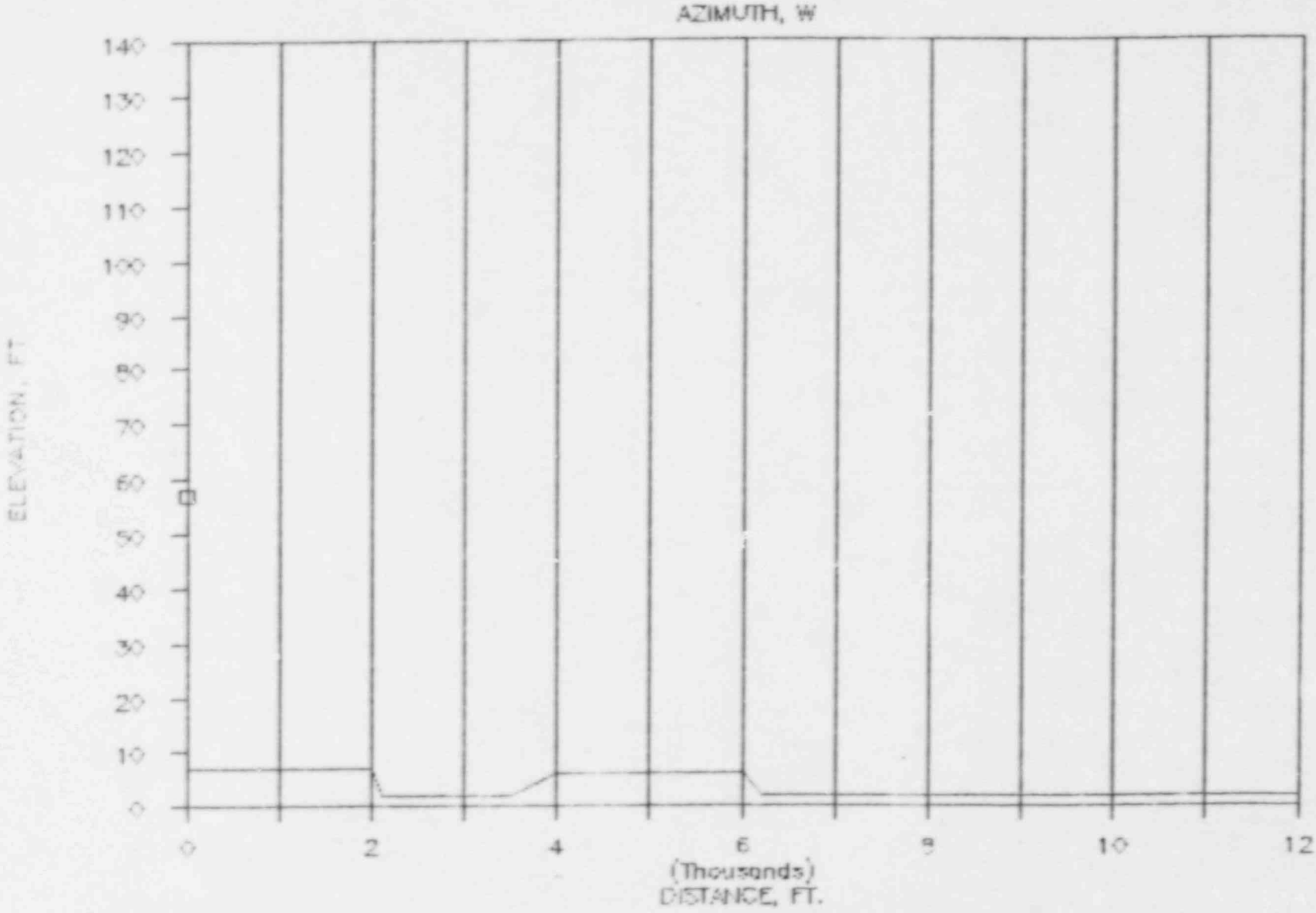

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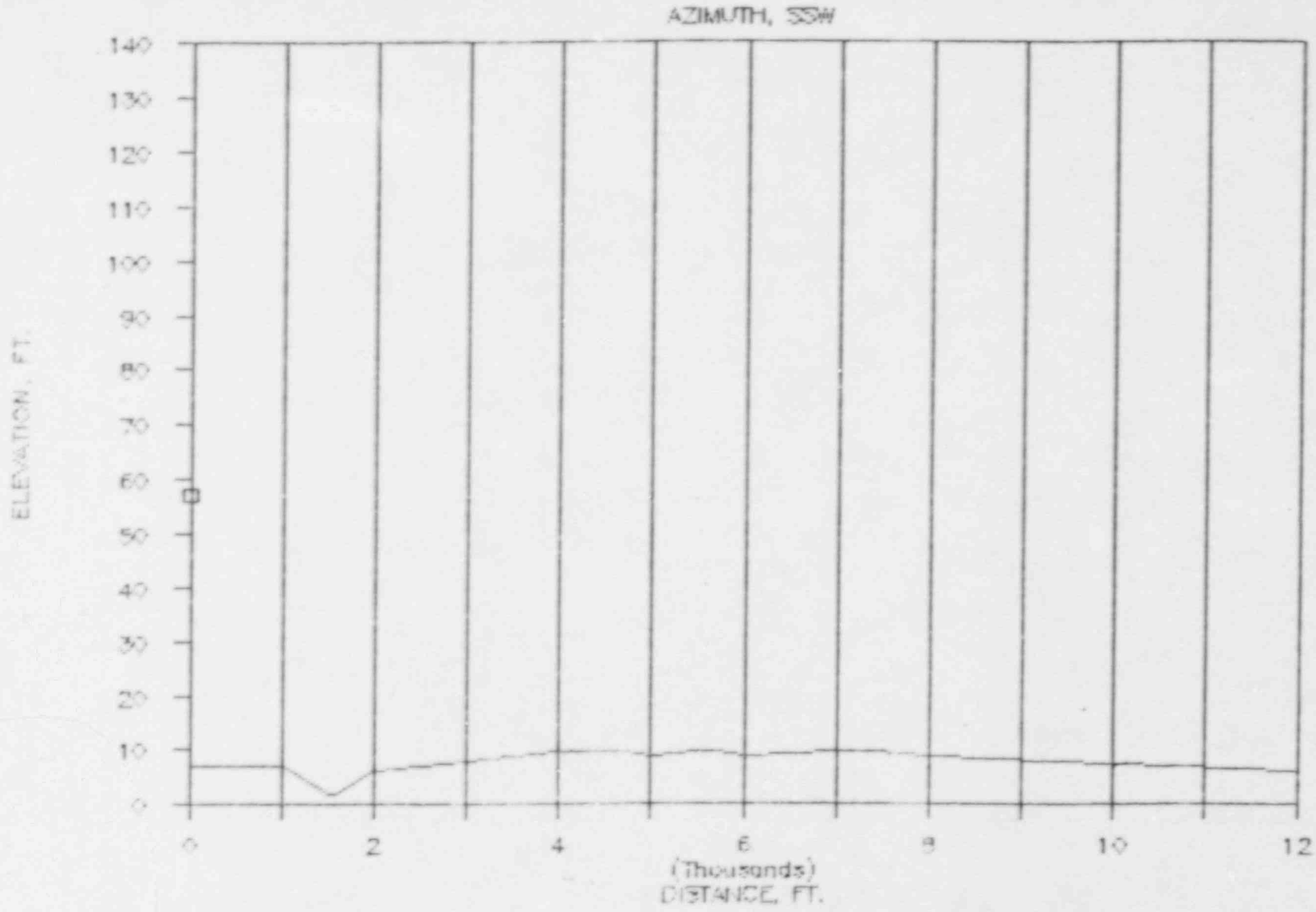

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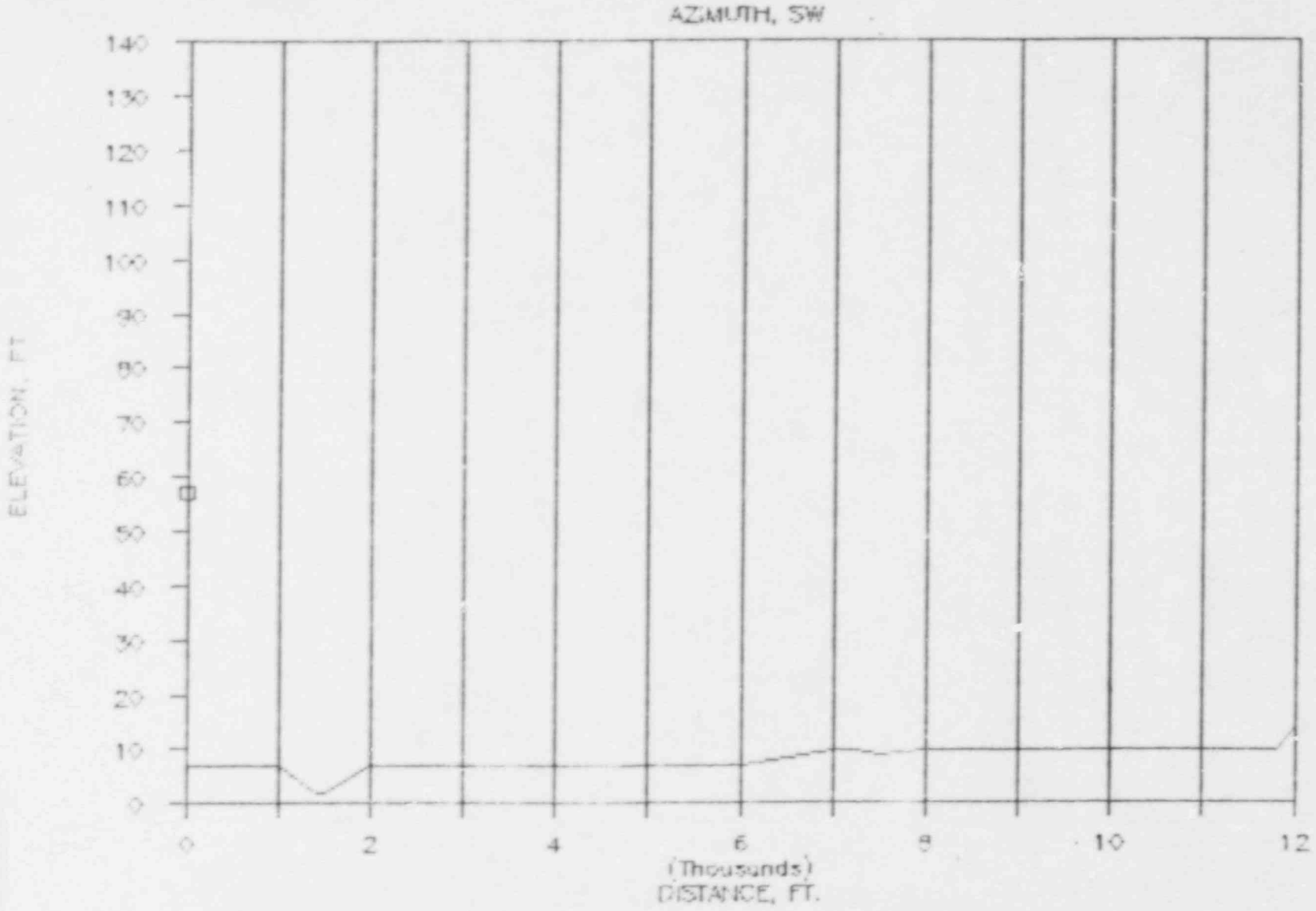

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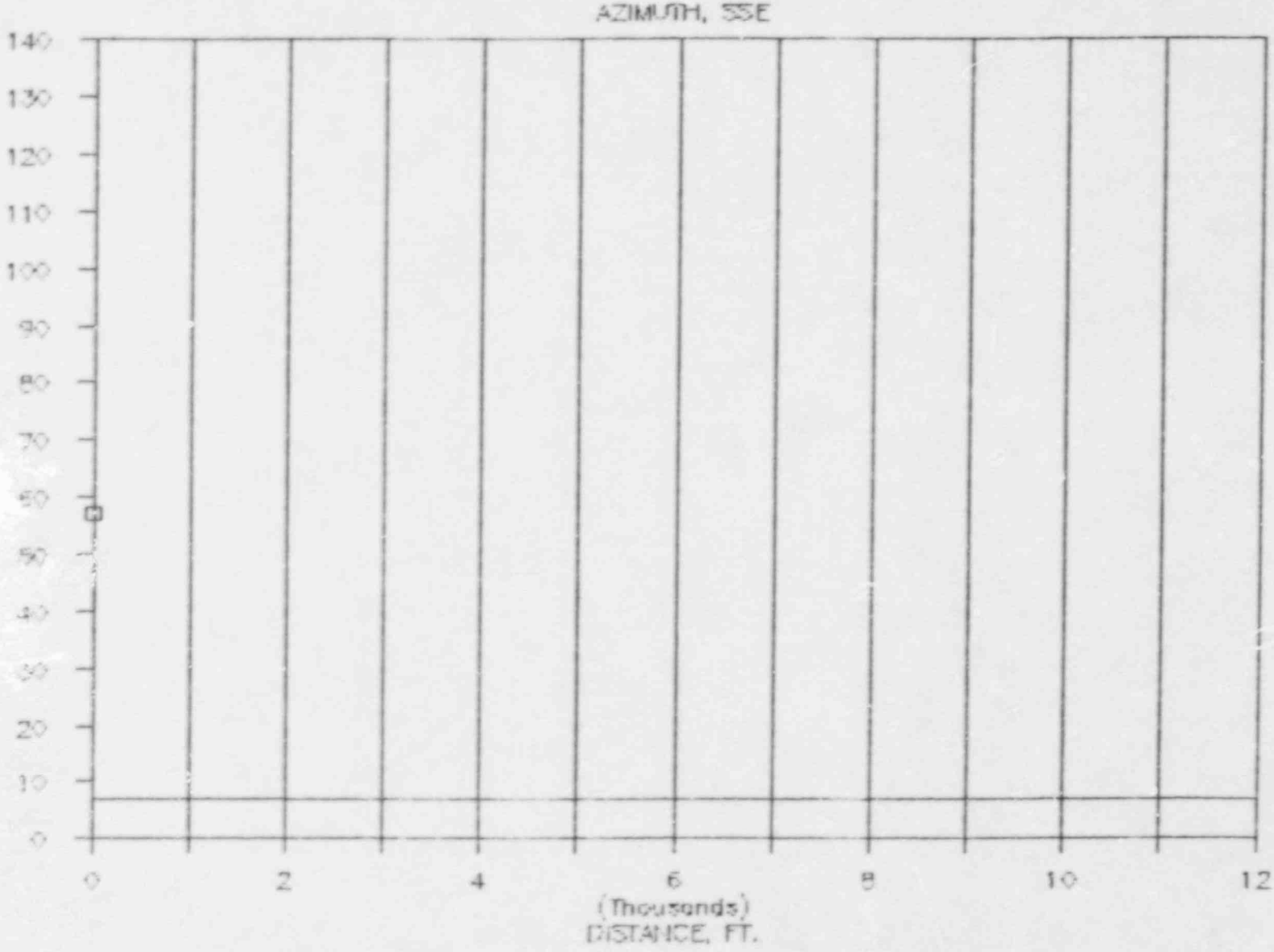

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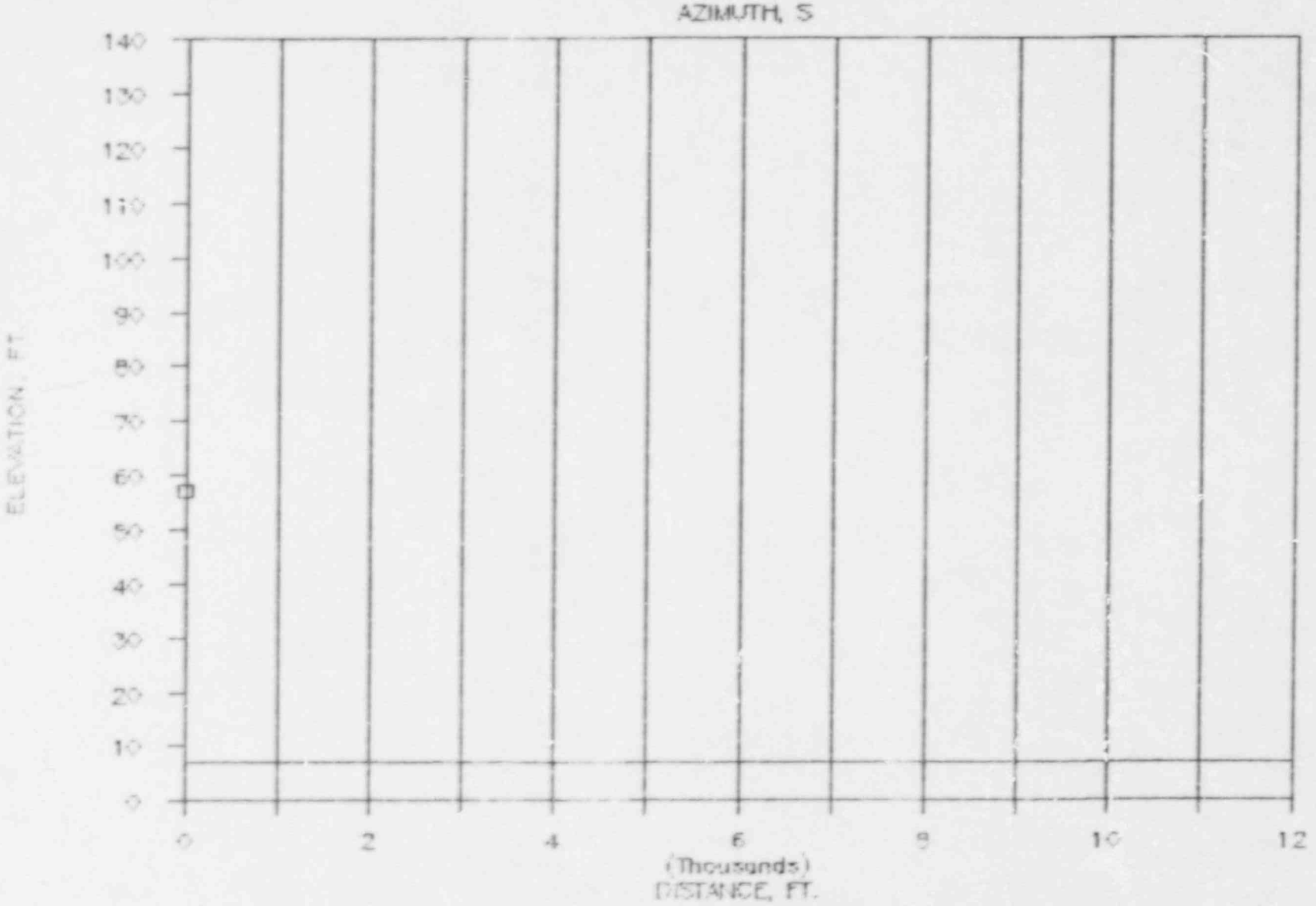
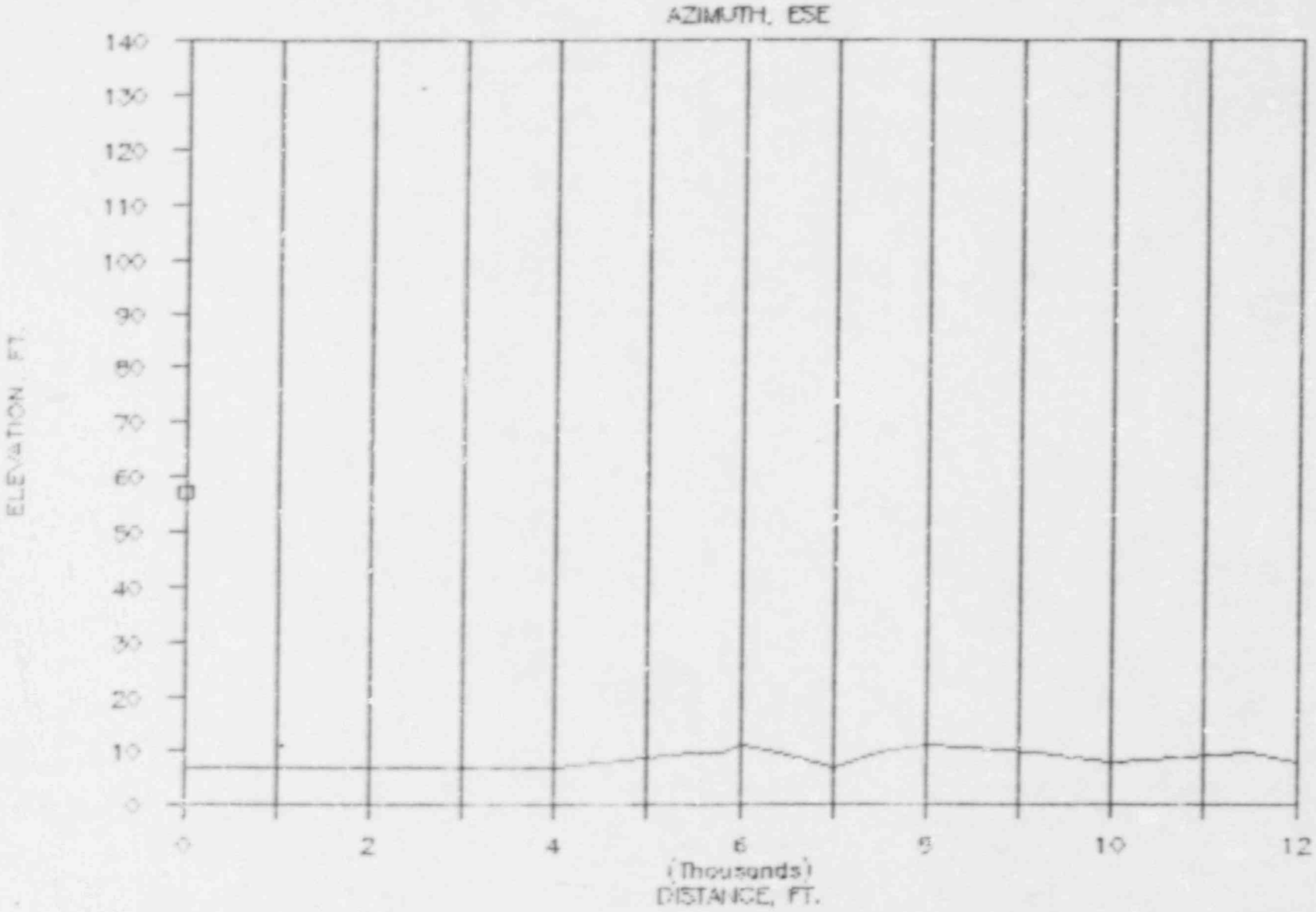
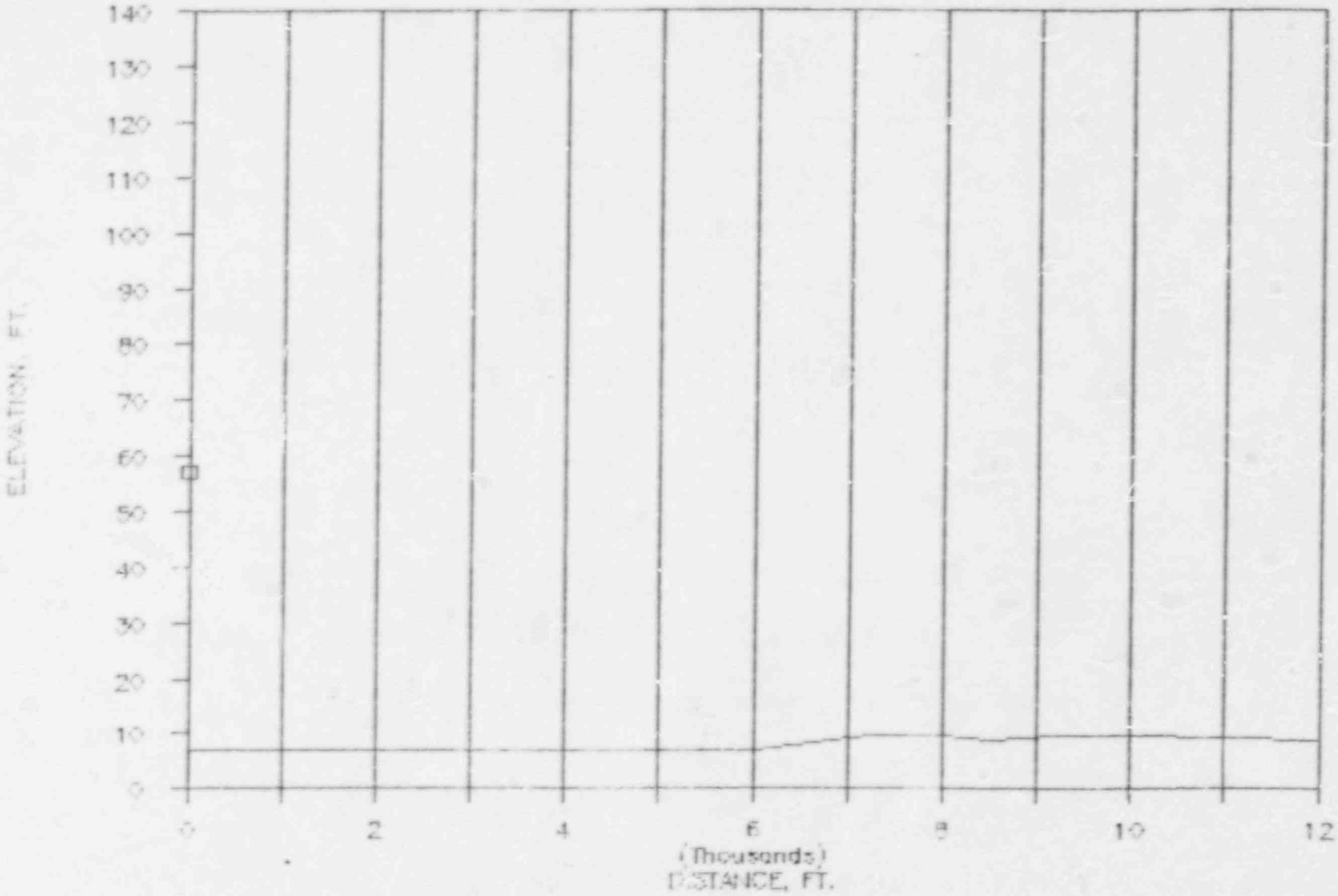


ARTIFICIAL ISLAND 118



ARTIFICIAL ISLAND 118

AZIMUTH, SE



GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	7.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	7.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	6.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	6.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	6.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	6.00	SOFT	0.	NO	0.	0.
43	500.	315.00	7.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	7.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	6.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	6.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	2.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	2.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	6.00	SOFT	0.	NO	0.	0.
50	500.	292.50	7.00	HARD	0.	NO	0.	0.
51	1000.	292.50	7.00	HARD	0.	NO	0.	0.
52	2000.	292.50	6.00	HARD	0.	NO	0.	0.
53	4000.	292.50	2.00	HARD	0.	NO	0.	0.
54	6000.	292.50	2.00	HARD	0.	NO	0.	0.
55	8000.	292.50	2.00	HARD	0.	NO	0.	0.
56	12000.	292.50	2.00	HARD	0.	NO	0.	0.
57	500.	270.00	7.00	HARD	0.	NO	0.	0.
58	1000.	270.00	7.00	HARD	0.	NO	0.	0.
59	2000.	270.00	7.00	HARD	0.	NO	0.	0.
60	4000.	270.00	6.00	HARD	0.	NO	0.	0.
61	6000.	270.00	6.00	HARD	0.	NO	0.	0.
62	8000.	270.00	2.00	HARD	0.	NO	0.	0.
63	12000.	270.00	2.00	HARD	0.	NO	0.	0.
64	500.	247.50	7.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	7.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	2.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	2.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	10.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	6.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	2.00	SOFT	0.	NO	0.	0.
71	500.	225.00	7.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	7.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #118-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	7.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	7.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	7.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	7.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	7.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	9.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	9.00	SOFT	0.	NO	0.	0.
8	500.	67.50	7.00	SOFT	0.	NO	0.	0.
9	1000.	67.50	7.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	7.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	7.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	10.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	12.00	SOFT	0.	NO	0.	0.
14	12000.	67.50	7.00	SOFT	0.	NO	0.	0.
15	500.	45.00	7.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	7.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	7.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	7.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	7.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	7.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	12.00	SOFT	0.	NO	0.	0.
22	500.	22.50	7.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	7.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	7.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	6.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	6.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	2.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	2.00	SOFT	0.	NO	0.	0.
29	500.	.00	7.00	SOFT	0.	NO	0.	0.
30	1000.	.00	7.00	SOFT	0.	NO	0.	0.
31	2000.	.00	7.00	SOFT	0.	NO	0.	0.
32	4000.	.00	6.00	SOFT	0.	NO	0.	0.
33	6000.	.00	6.00	SOFT	0.	NO	0.	0.
34	8000.	.00	6.00	SOFT	0.	NO	0.	0.
35	12000.	.00	8.00	SOFT	0.	NO	0.	0.
36	500.	337.50	7.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #118-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 7.00 HEIGHT ABOVE GROUND= 50.00

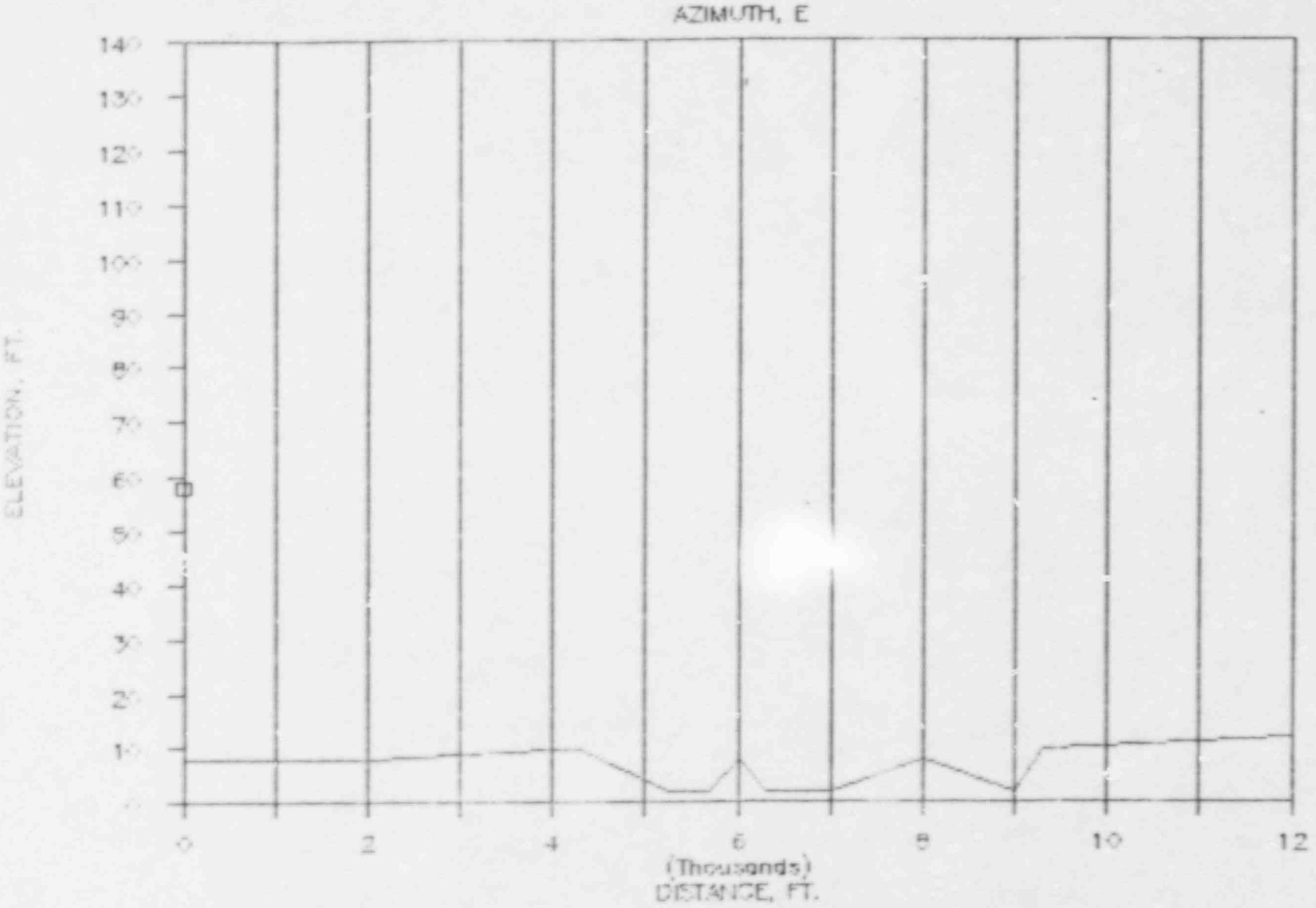
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #118-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIV HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	7.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	7.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	7.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	10.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	14.00	SOFT	0.	NO	0.	0.
78	500.	202.50	7.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	7.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	6.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	10.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	9.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	9.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	6.00	SOFT	0.	NO	0.	3.
85	500.	180.00	7.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	7.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	7.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	7.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	7.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	7.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	7.00	SOFT	0.	NO	0.	0.
92	500.	157.50	7.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	7.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	7.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	7.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	7.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	7.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	7.00	SOFT	0.	NO	0.	0.
99	500.	135.00	7.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	7.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	7.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	7.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	7.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	10.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	9.00	SOFT	0.	NO	0.	0.
106	500.	112.50	7.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	7.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	7.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	7.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	11.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	11.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	8.00	SOFT	0.	NO	0.	0.

ARTIFICIAL ISLAND 119



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #118-PEN10

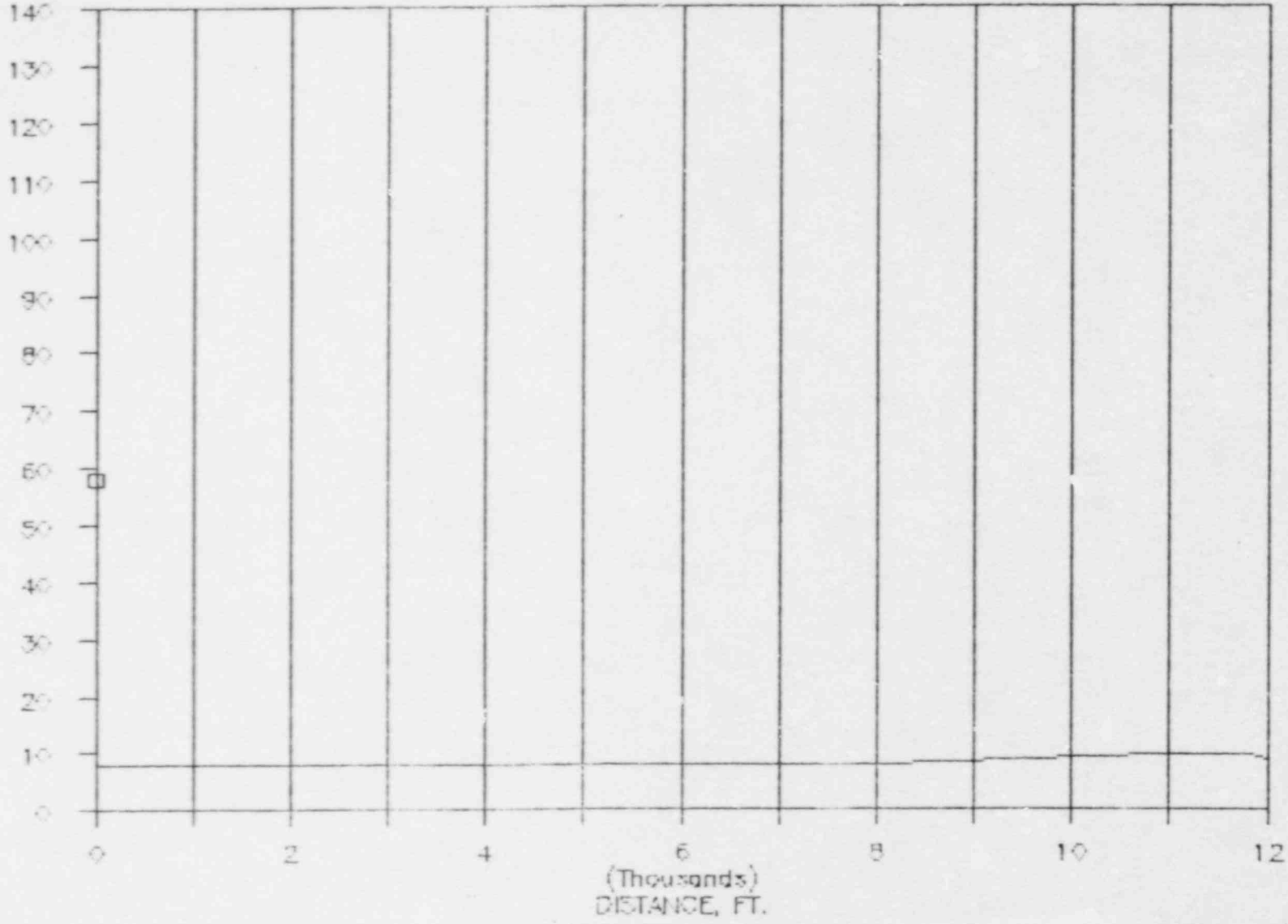
SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

DISTANCE IN FEET

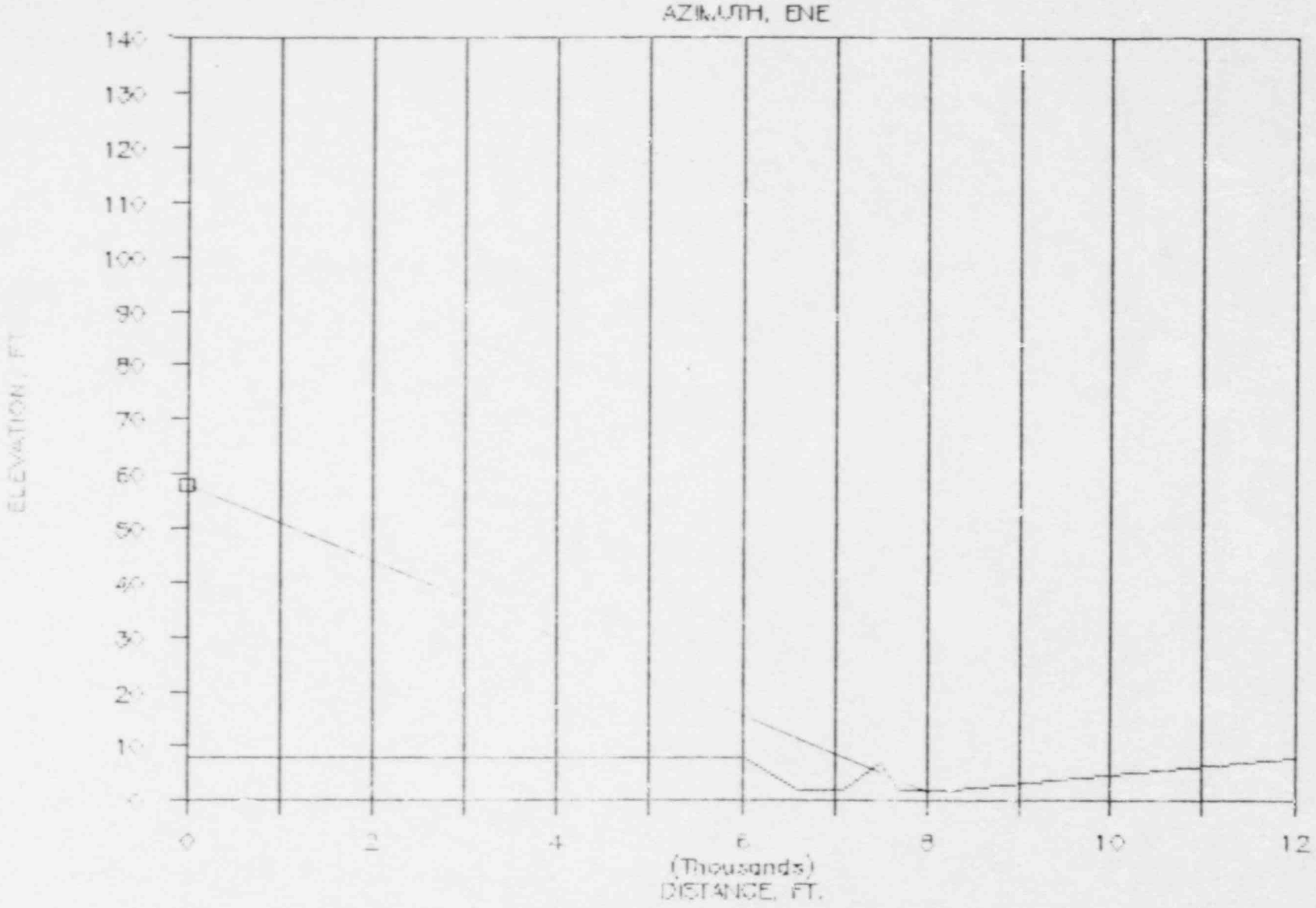
AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	72.	66.
NE	107.	97.	87.	80.	76.	72.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	108.	100.	84.	61.	50.	45.	38.
W	108.	100.	86.	63.	51.	45.	38.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	80.	76.	72.	66.
SSW	107.	97.	87.	80.	76.	72.	66.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	76.	72.	66.
ESE	107.	97.	87.	80.	76.	72.	66.

ARTIFICIAL ISLAND 119

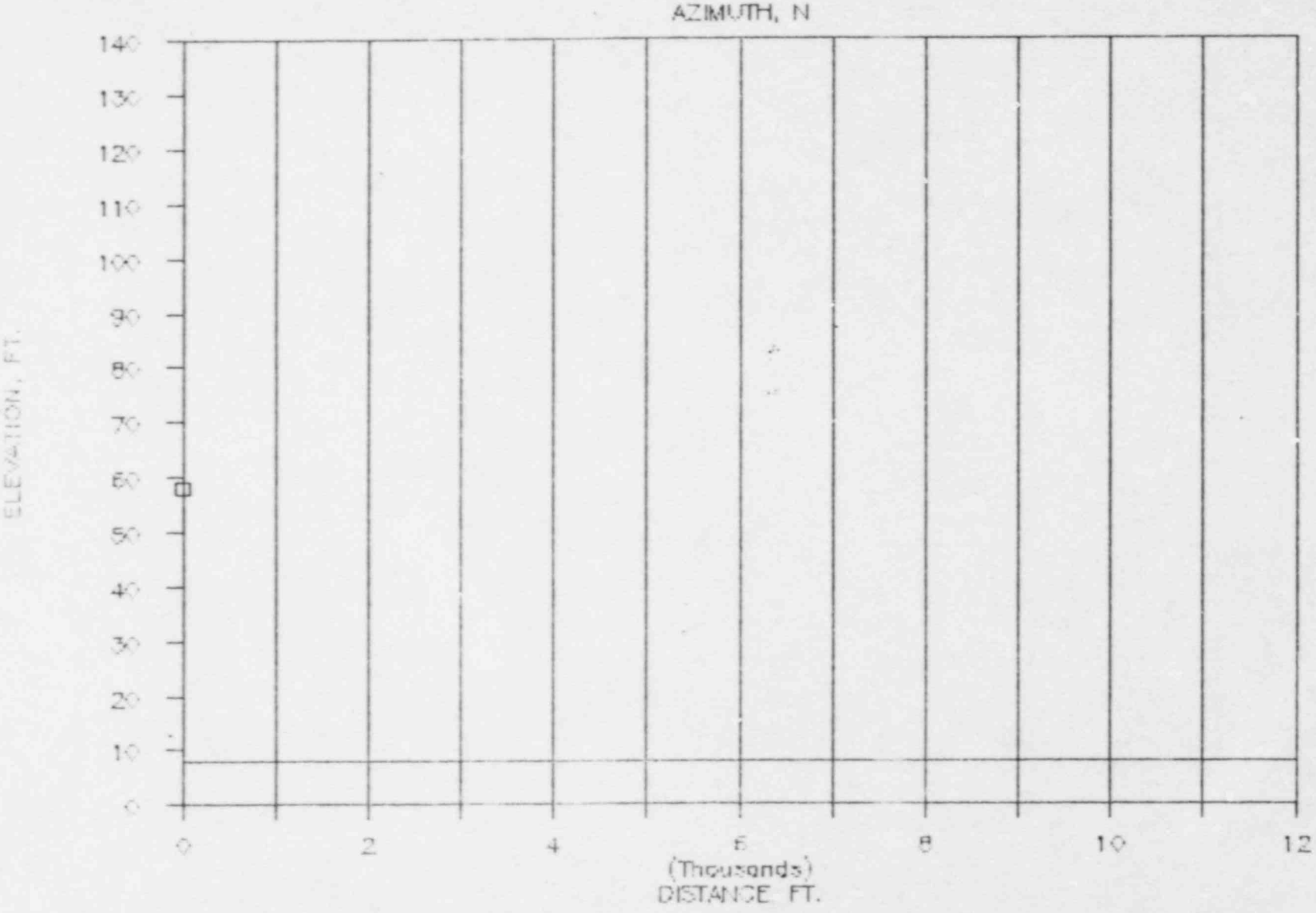
AZIMUTH, NE



ARTIFICIAL ISLAND 119

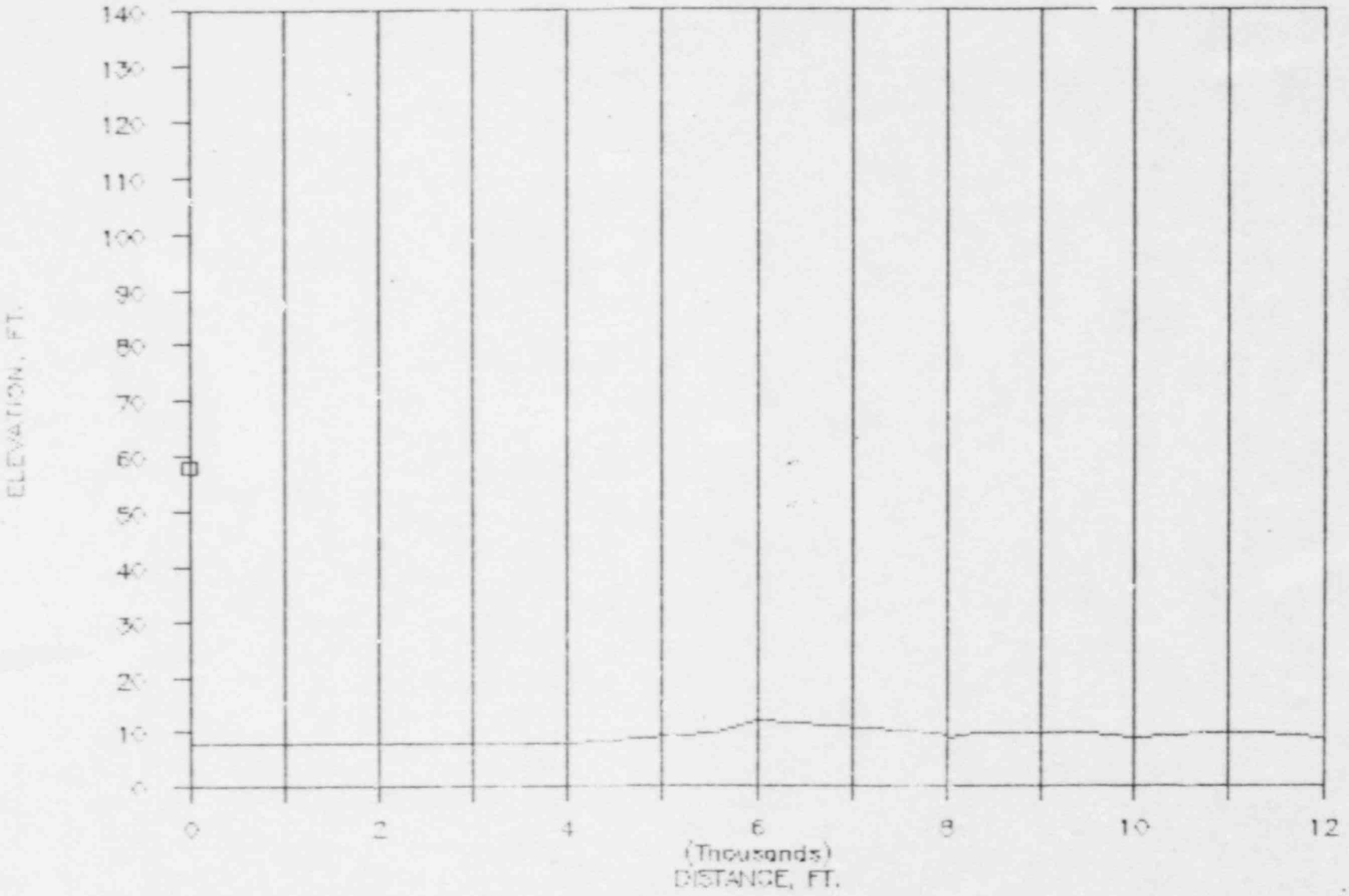


ARTIFICIAL ISLAND 119

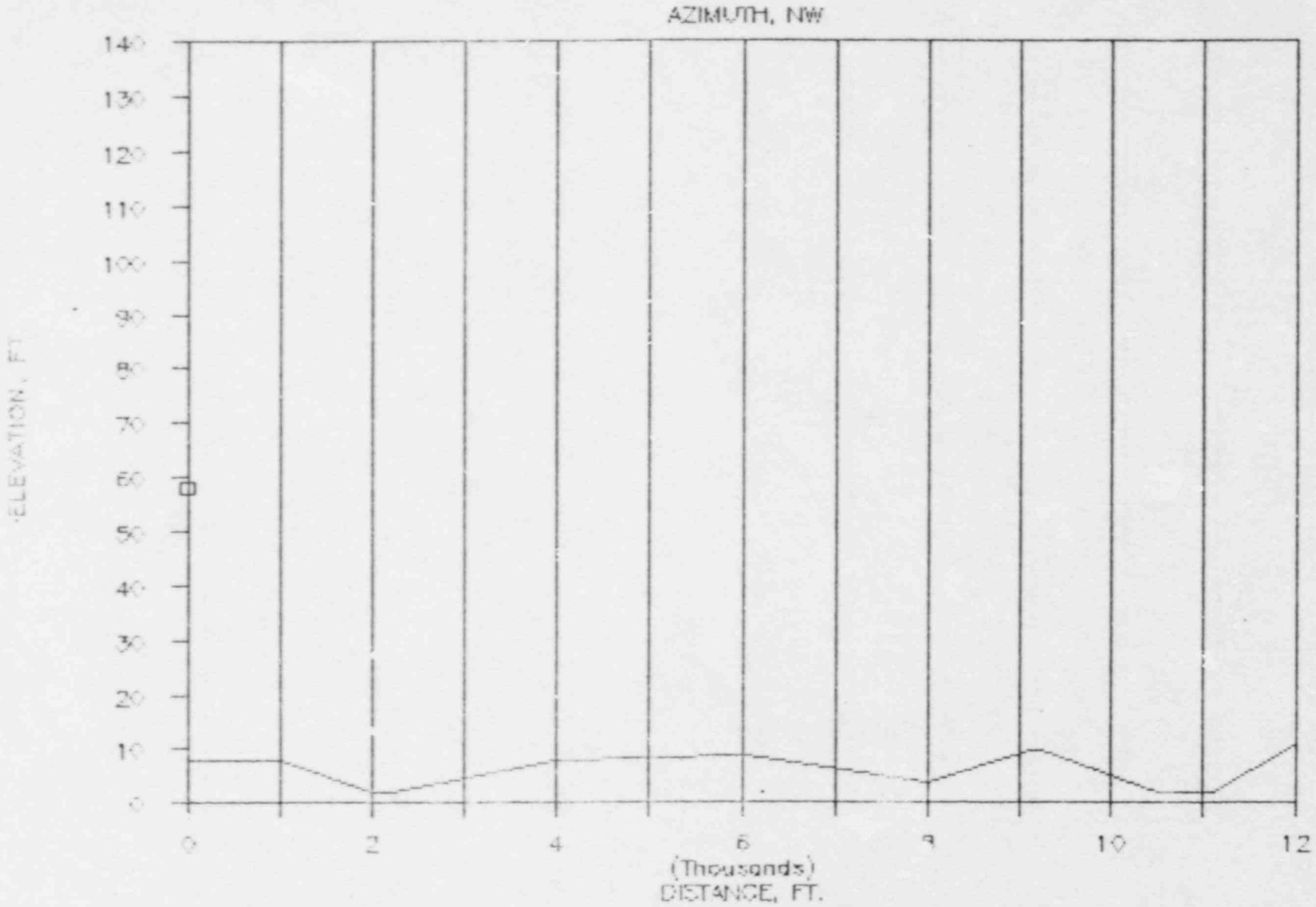


ARTIFICIAL ISLAND 119

AZIMUTH, NINE



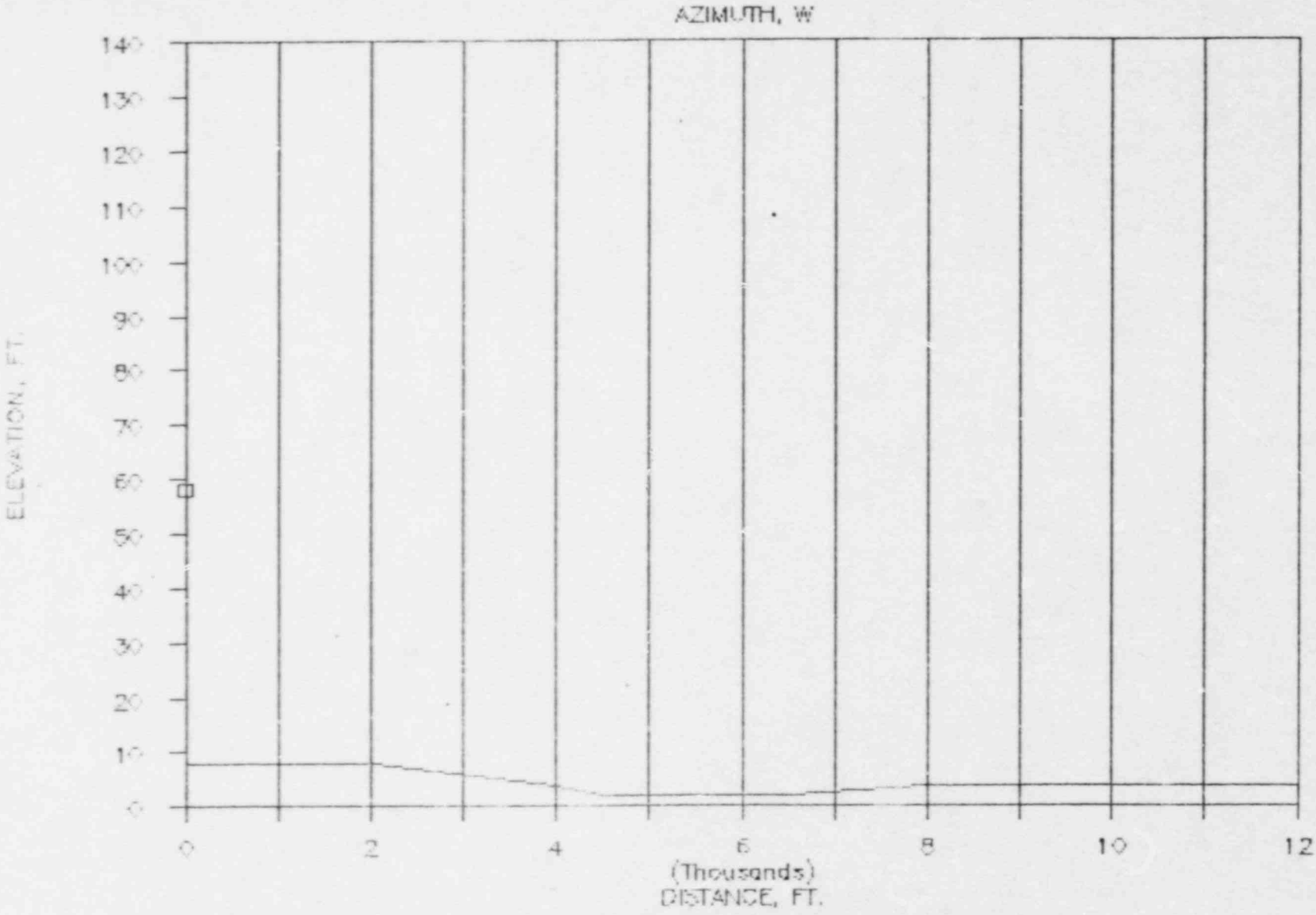
ARTIFICIAL ISLAND 119



ARTIFICIAL ISLAND 119

AZIMUTH, NNW

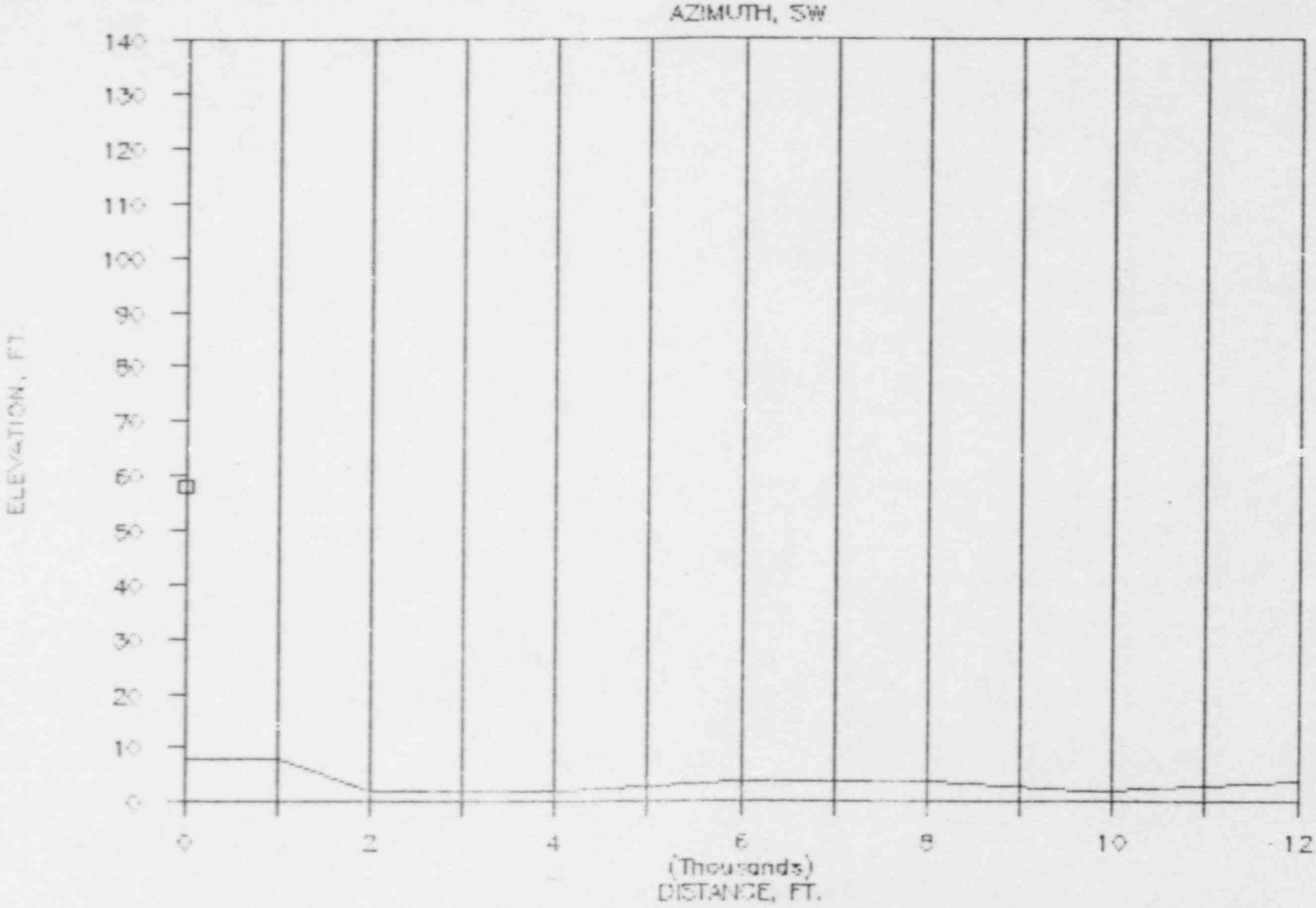
ARTIFICIAL ISLAND 119



ARTIFICIAL ISLAND 119

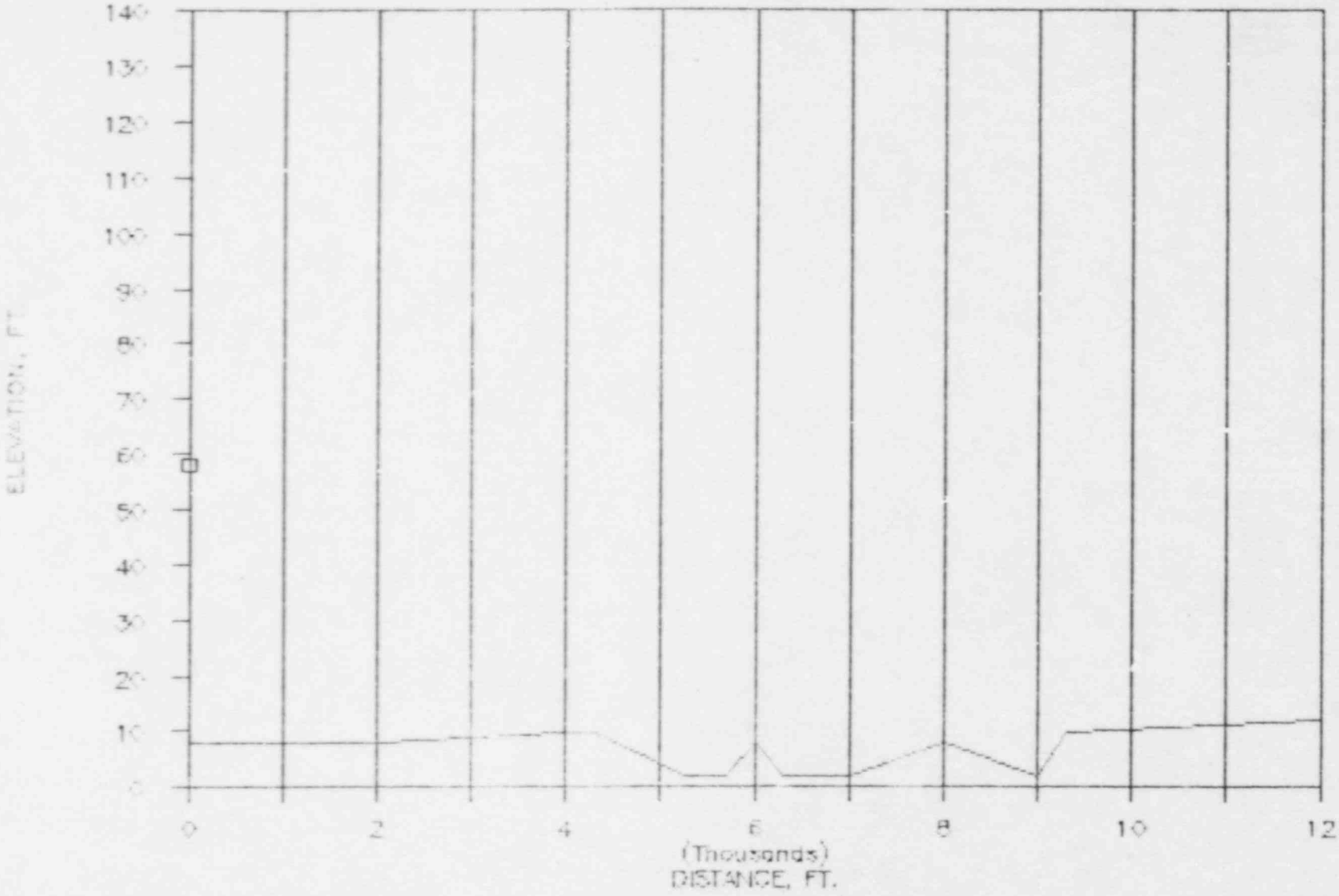
AZIMUTH, WNW

ARTIFICIAL ISLAND 119



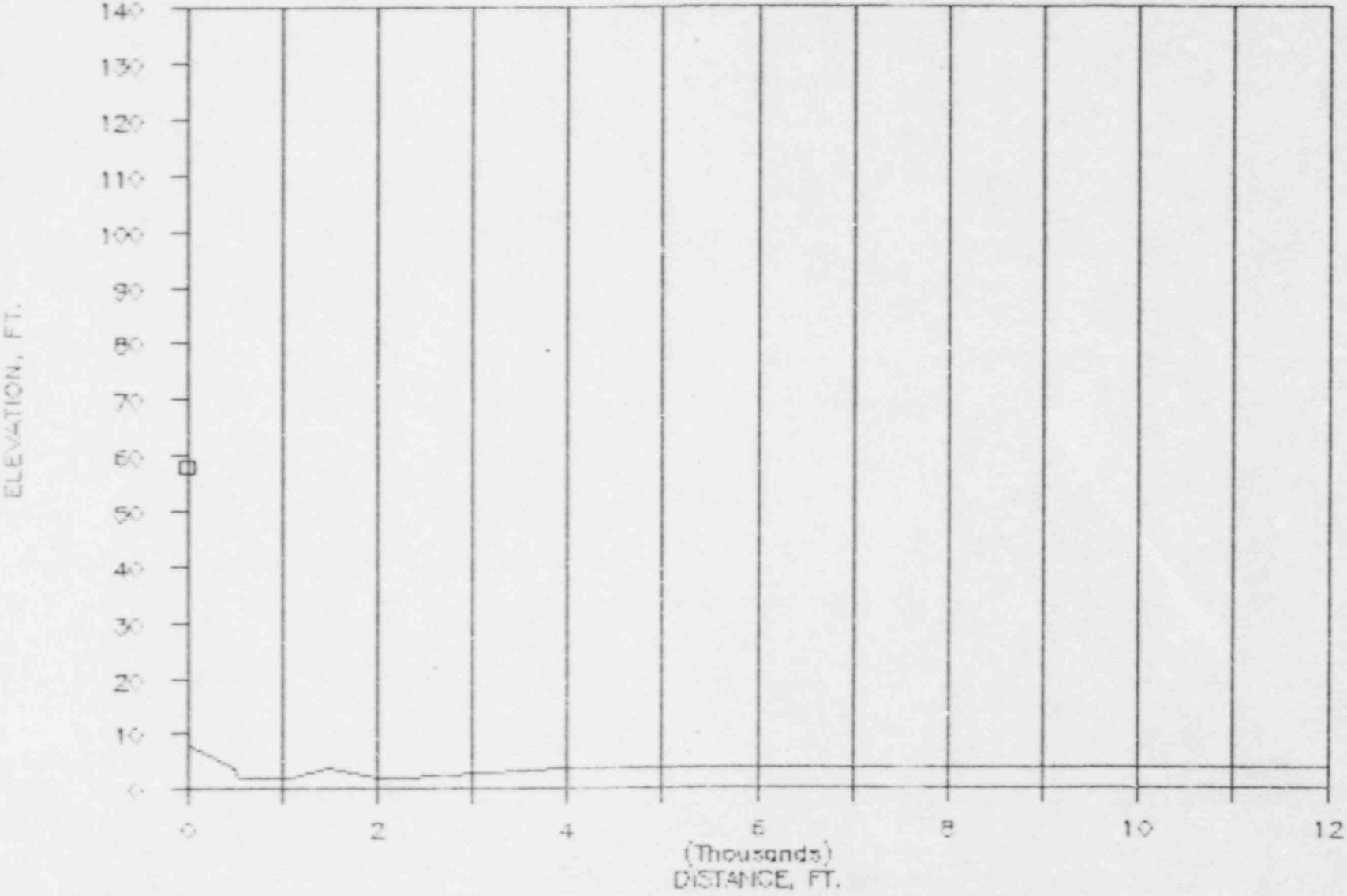
ARTIFICIAL ISLAND 119

AZIMUTH, WSW

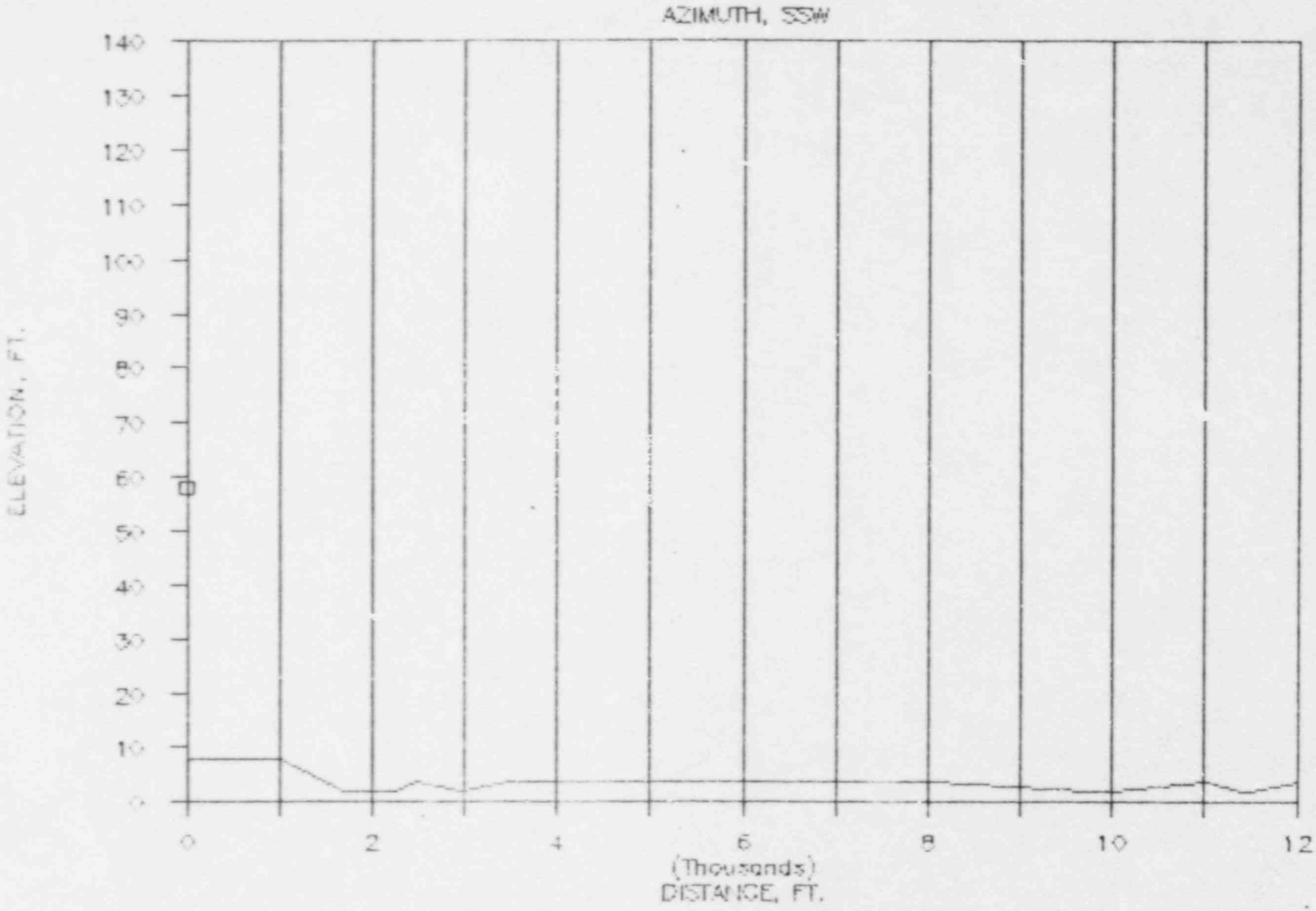


ARTIFICIAL ISLAND 119

AZIMUTH, S

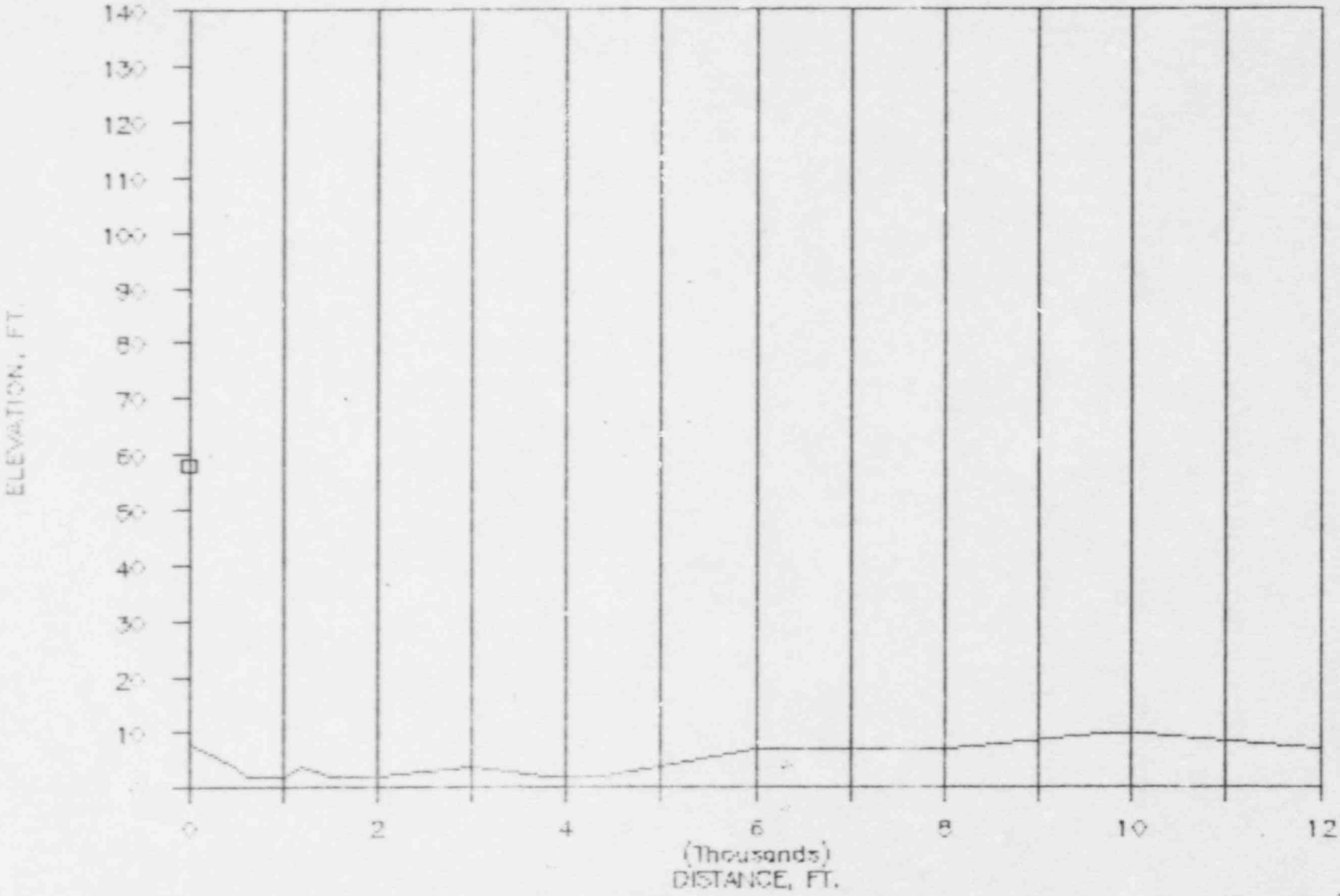


ARTIFICIAL ISLAND 119



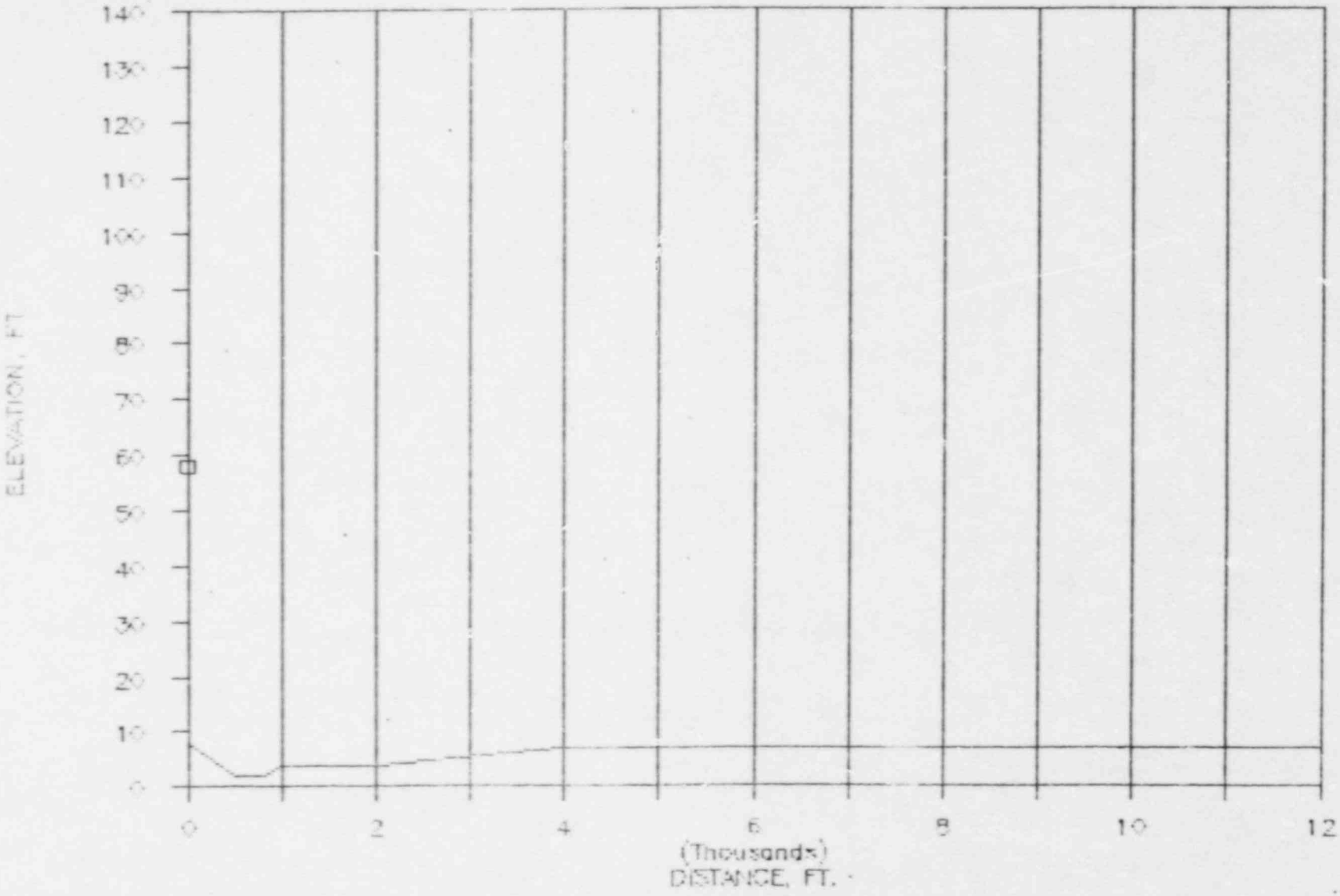
ARTIFICIAL ISLAND 119

AZIMUTH, SE



ARTIFICIAL ISLAND 119

AZIMUTH, SSE

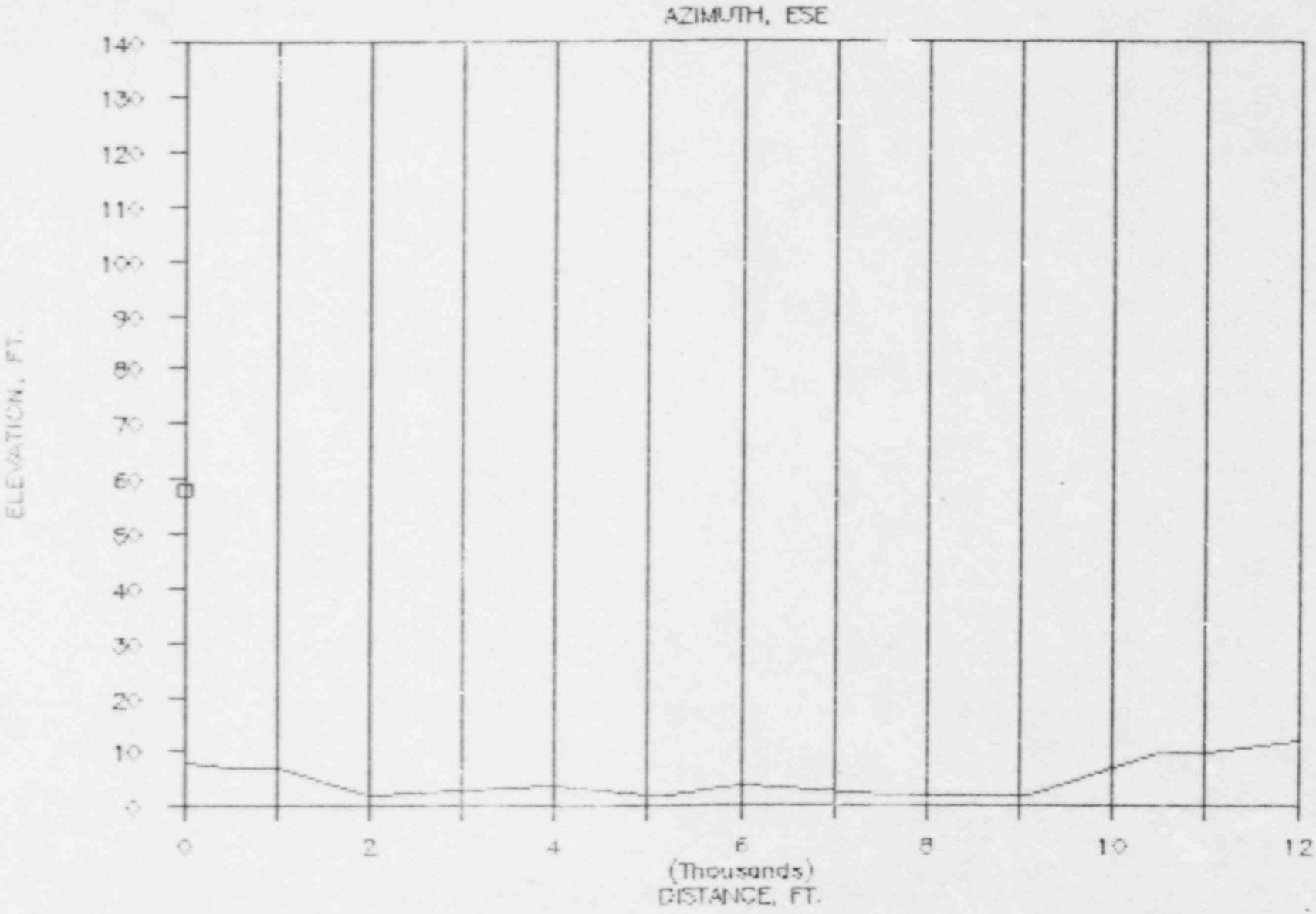


PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #119-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	8.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	8.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	8.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	10.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	8.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	8.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	12.00	SOFT	0.	NO	0.	0.
8	500.	67.50	8.00	SOFT	0.	NO	0.	0.
9	1000.	67.50	8.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	8.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	8.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	8.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	2.00	SOFT	0.	YES	7500.	7.
14	12000.	67.50	8.00	SOFT	0.	NO	0.	0.
15	500.	45.00	8.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	8.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	8.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	8.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	8.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	8.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	9.00	SOFT	0.	NO	0.	0.
22	500.	22.50	8.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	8.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	8.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	8.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	12.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	9.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	9.00	SOFT	0.	NO	0.	0.
29	500.	.00	8.00	SOFT	0.	NO	0.	0.
30	1000.	.00	8.00	SOFT	0.	NO	0.	0.
31	2000.	.00	8.00	SOFT	0.	NO	0.	0.
32	4000.	.00	8.00	SOFT	0.	NO	0.	0.
33	6000.	.00	8.00	SOFT	0.	NO	0.	0.
34	8000.	.00	8.00	SOFT	0.	NO	0.	0.
35	12000.	.00	8.00	SOFT	0.	NO	0.	0.
36	500.	337.50	8.00	SOFT	0.	NO	0.	0.

ARTIFICIAL ISLAND 119



GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	2.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	2.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	4.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	4.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	4.00	SOFT	0.	NO	0.	0.
78	500.	202.50	8.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	8.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	2.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	4.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	4.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	4.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	4.00	SOFT	0.	NO	0.	0.
85	500.	180.00	4.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	2.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	2.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	4.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	4.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	4.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	4.00	SOFT	0.	NO	0.	0.
92	500.	157.50	2.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	4.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	4.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	7.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	7.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	7.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	7.00	SOFT	0.	NO	0.	0.
99	500.	135.00	4.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	2.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	2.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	2.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	7.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	7.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	7.00	SOFT	0.	NO	0.	0.
106	500.	112.50	7.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	7.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	2.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	4.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	4.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	2.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	12.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	8.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	8.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	8.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	8.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	8.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	9.00	SOFT	0.	NO	0.	0.
43	500.	315.00	8.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	8.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	2.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	8.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	9.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	4.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	11.00	SOFT	0.	NO	0.	0.
50	500.	292.50	8.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	8.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	8.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	2.00	SOFT	0.	NO	0.	0.
54	6000.	292.50	4.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	4.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	4.00	SOFT	0.	NO	0.	0.
57	500.	270.00	8.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	8.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	4.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	4.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	2.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	4.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	4.00	SOFT	0.	NO	0.	0.
64	500.	247.50	8.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	8.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	8.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	2.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	2.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	4.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	4.00	SOFT	0.	NO	0.	0.
71	500.	225.00	8.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	8.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND AMS SIREN #119-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	67.	66.
NE	107.	97.	87.	80.	76.	72.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	0.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	80.	76.	72.	66.
SSW	107.	97.	87.	80.	76.	72.	66.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	76.	72.	66.
ESE	107.	97.	87.	80.	76.	72.	66.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #119-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 8.00 HEIGHT ABOVE GROUND= 50.00

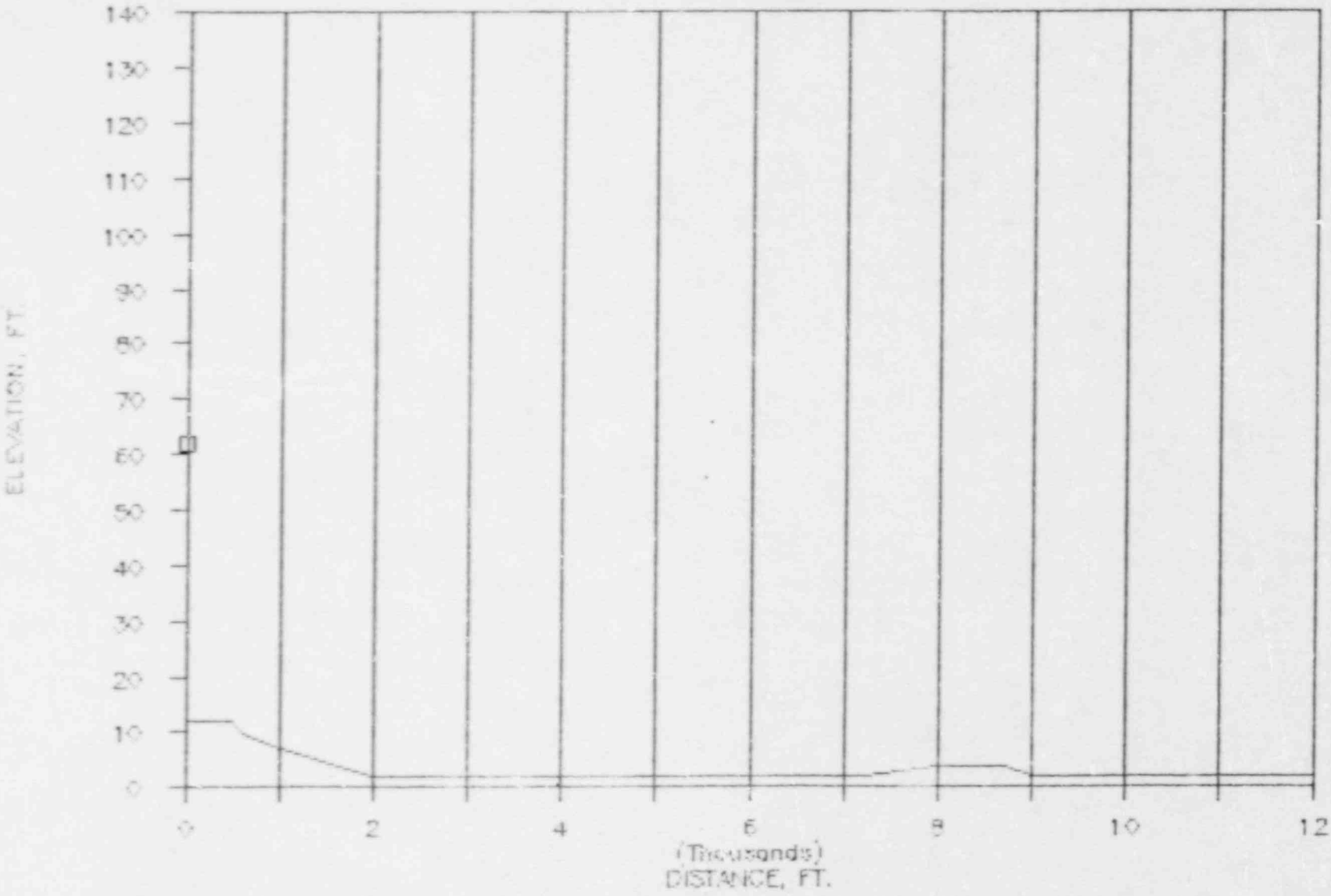
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #119-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

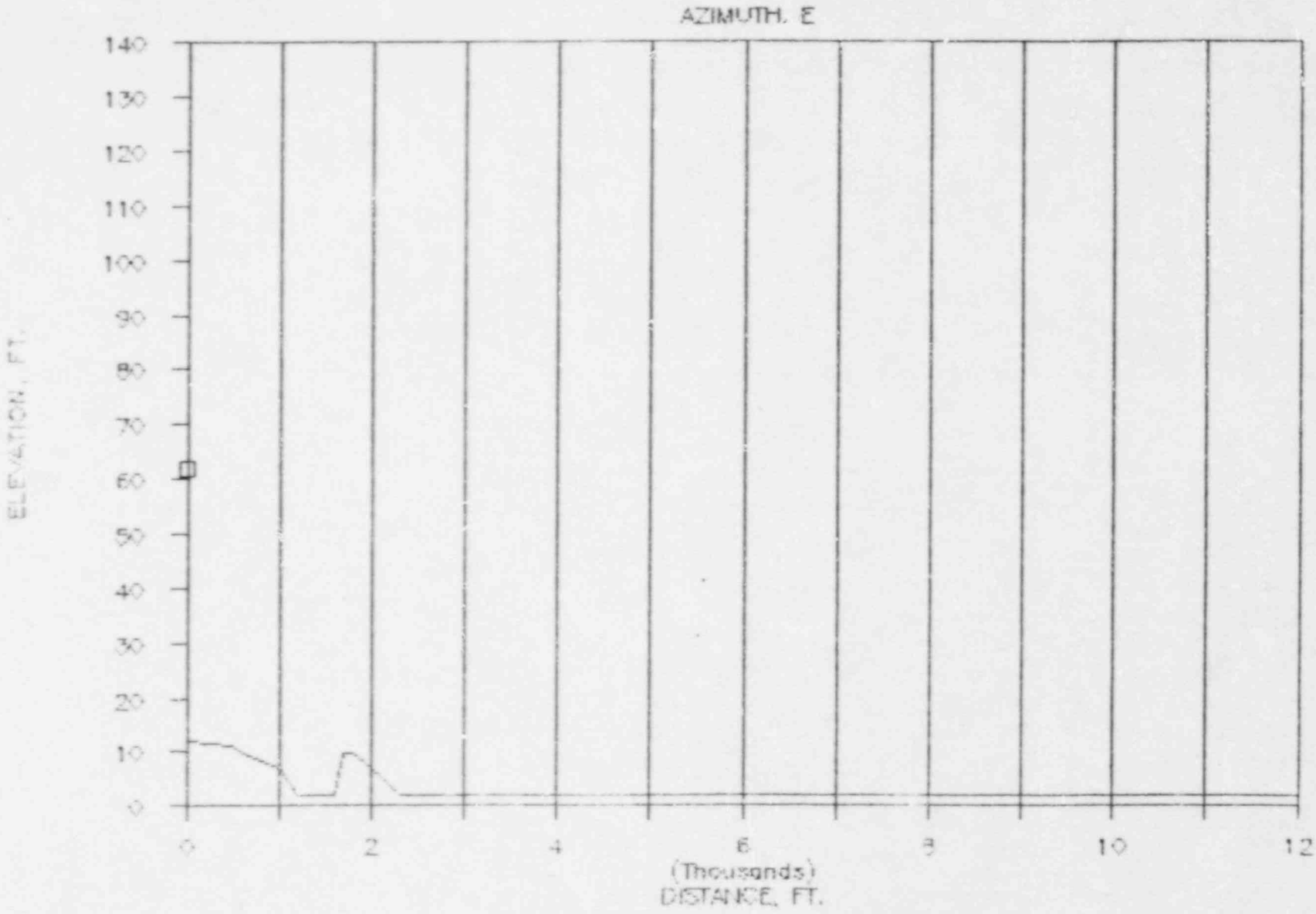
YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(M/S) H1	WIND SPEED(M/S) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

ARTIFICIAL ISLAND 202

AZIMUTH, ENE



ARTIFICIAL ISLAND 202



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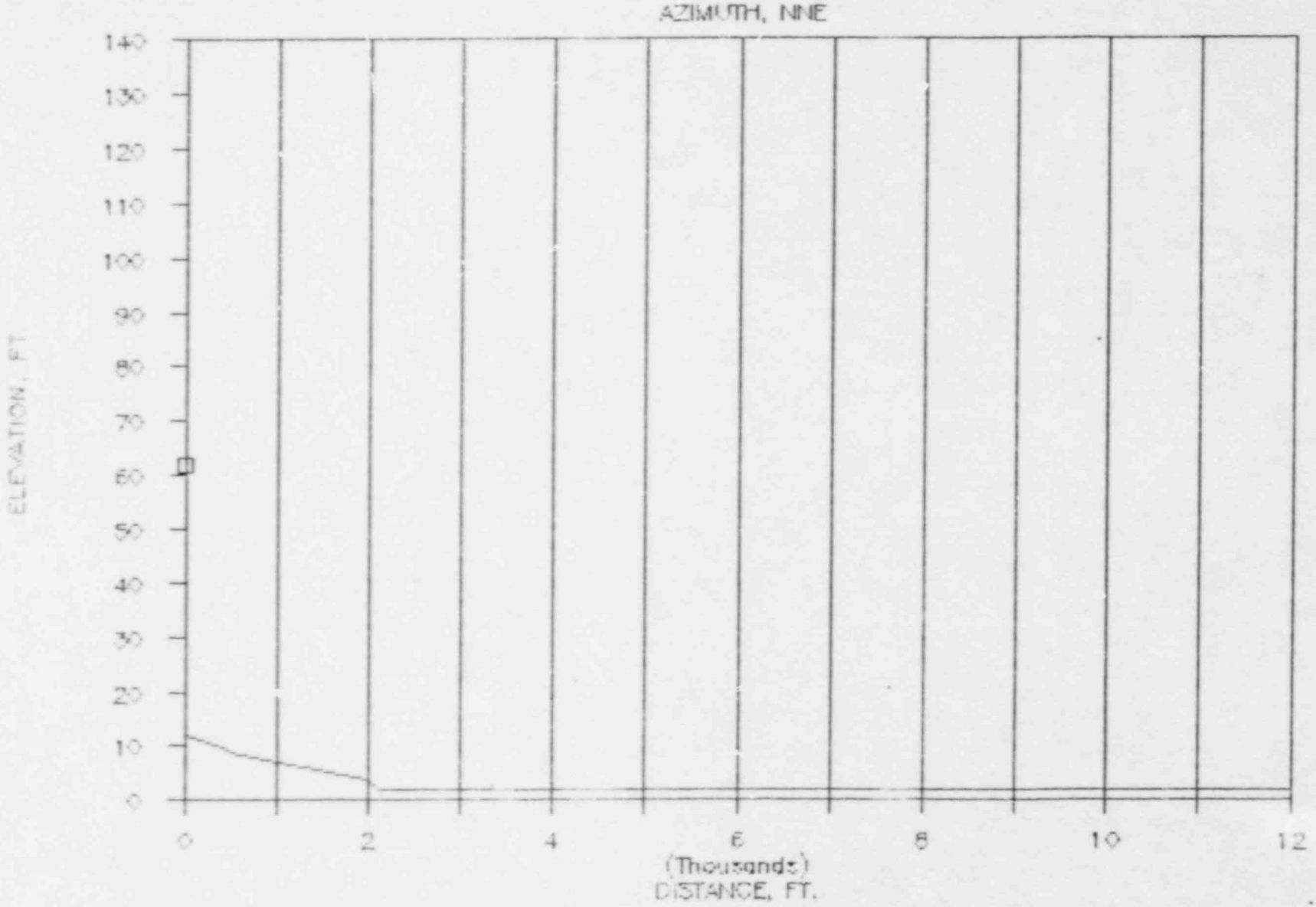

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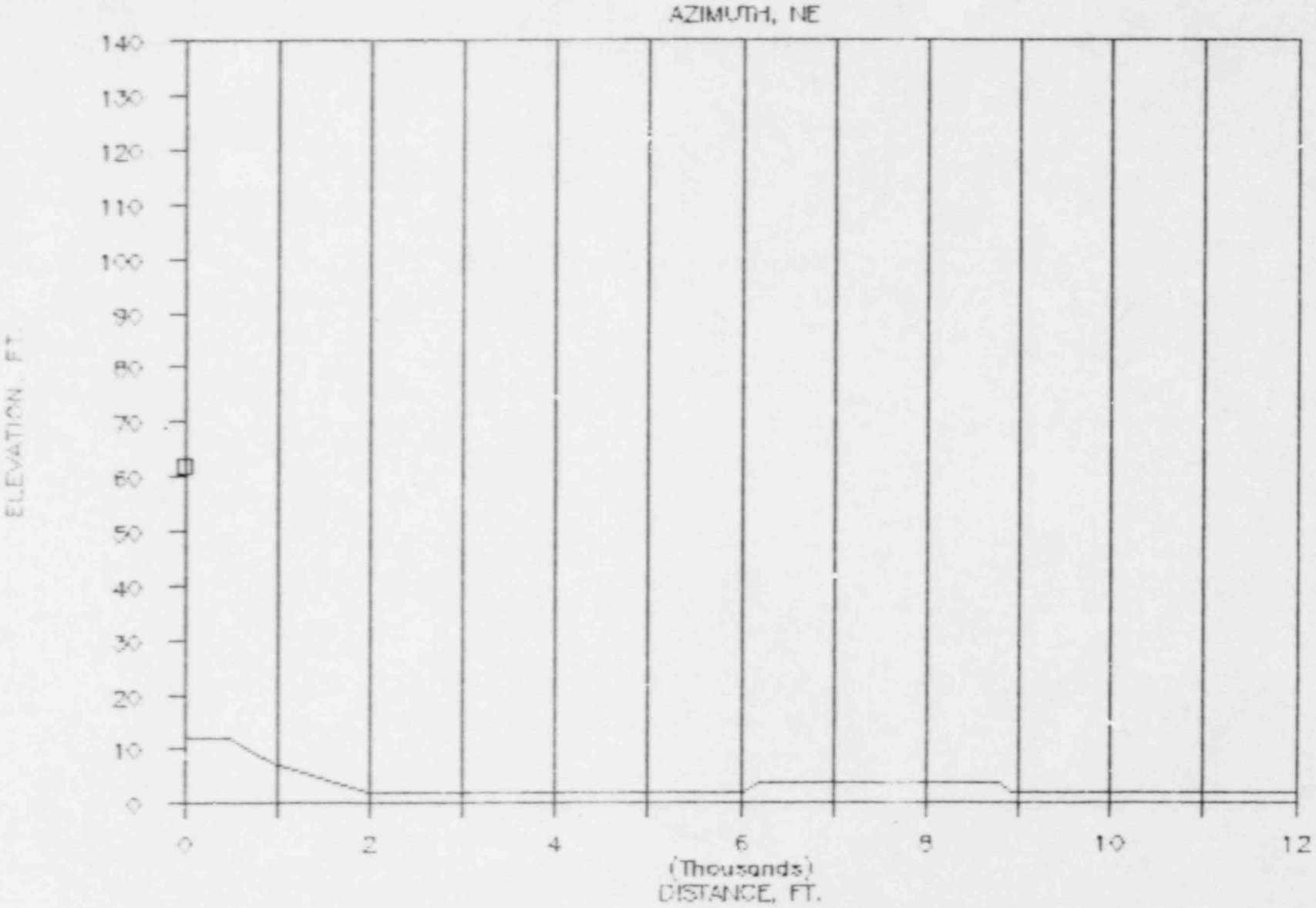
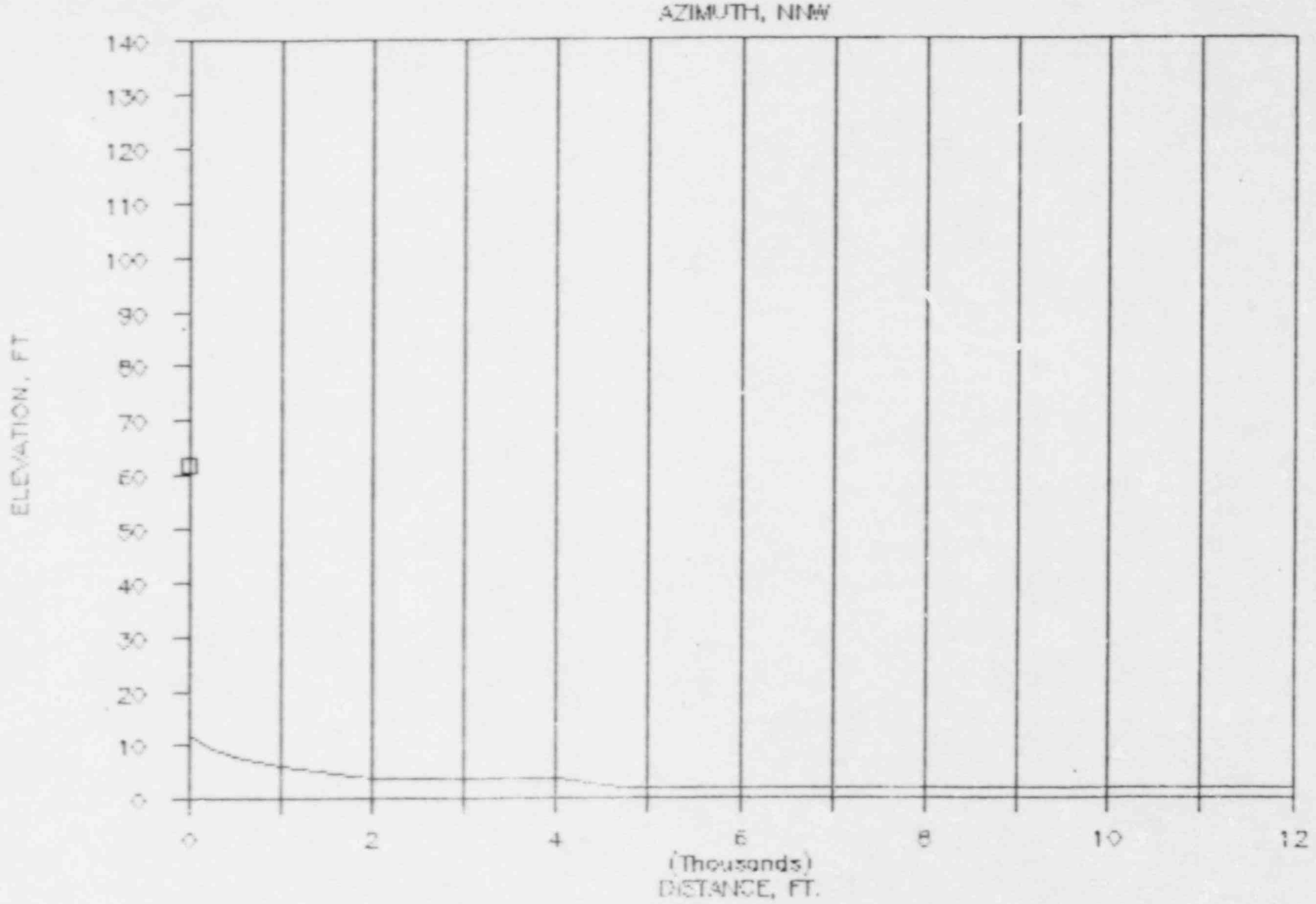
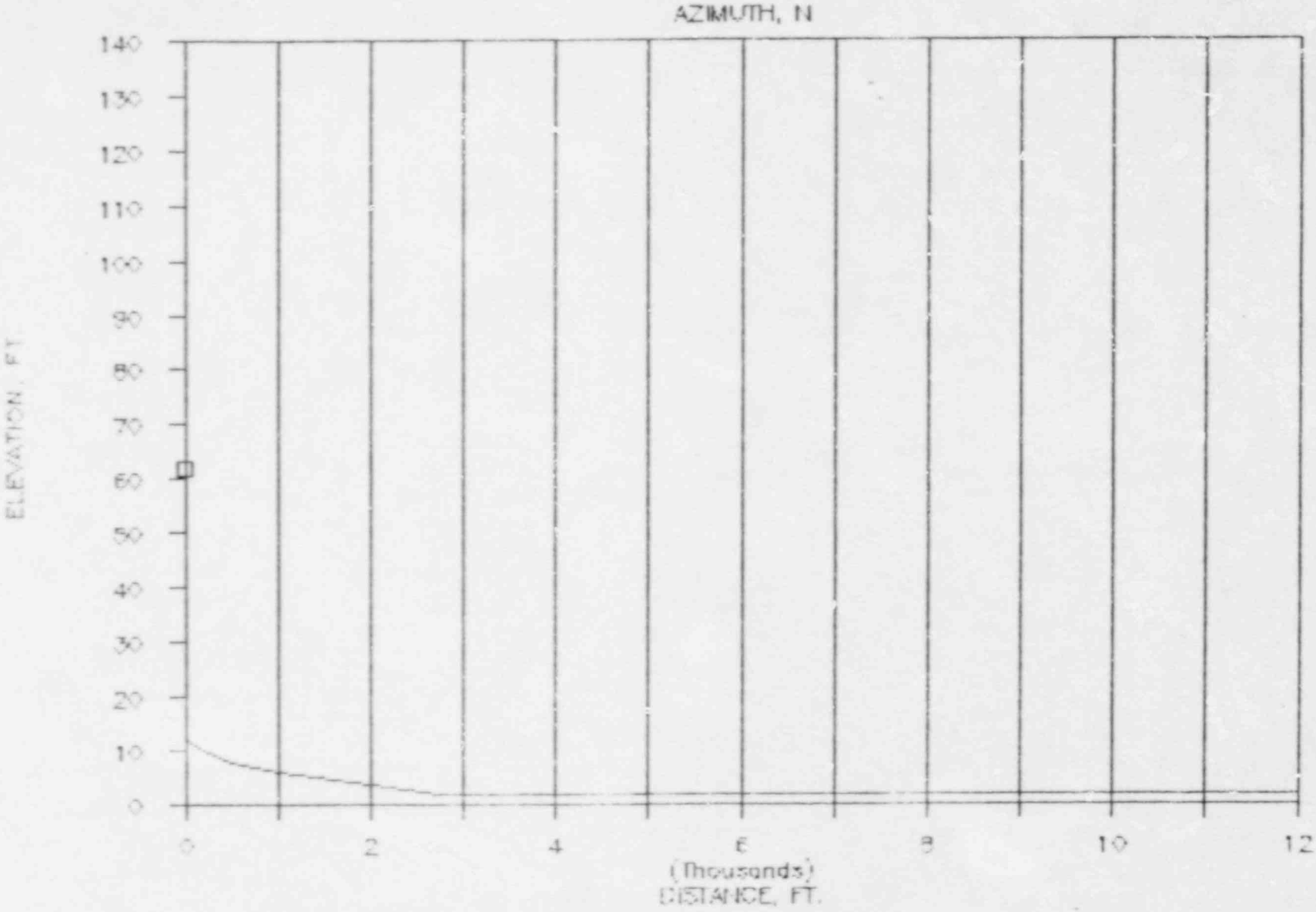


ARTIFICIAL ISLAND 202

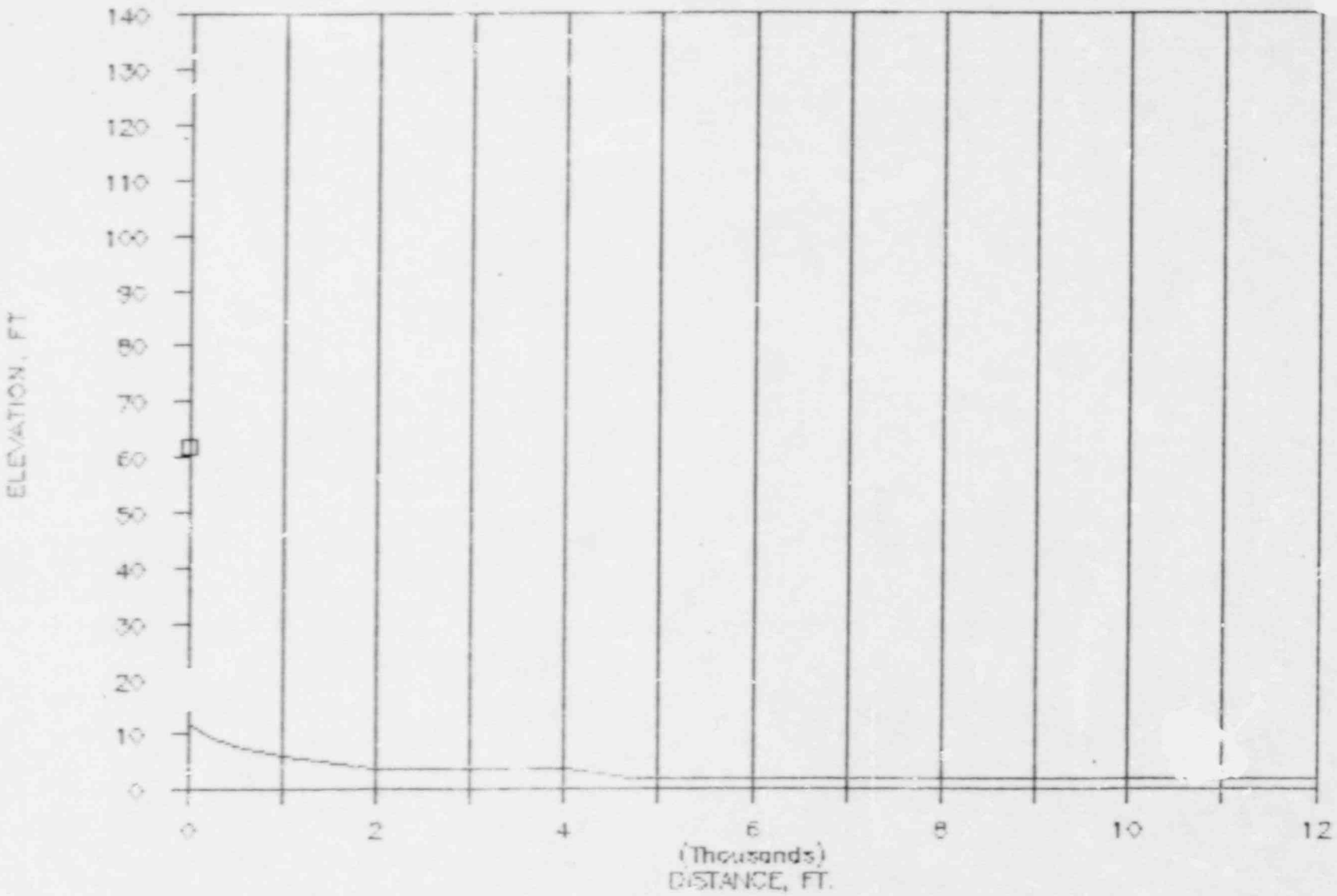


ARTIFICIAL ISLAND 202



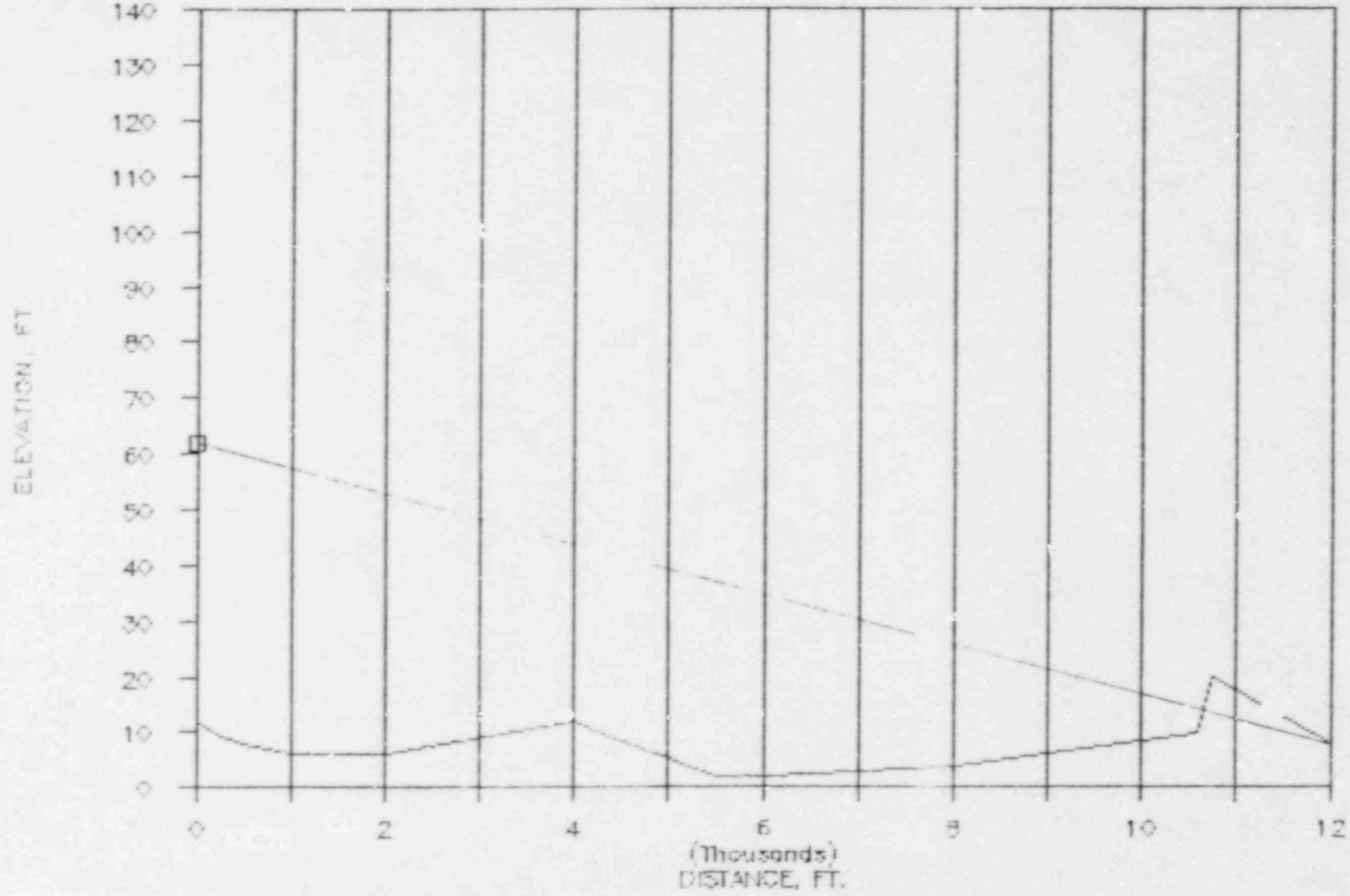
ARTIFICIAL ISLAND 202

AZIMUTH, NNW

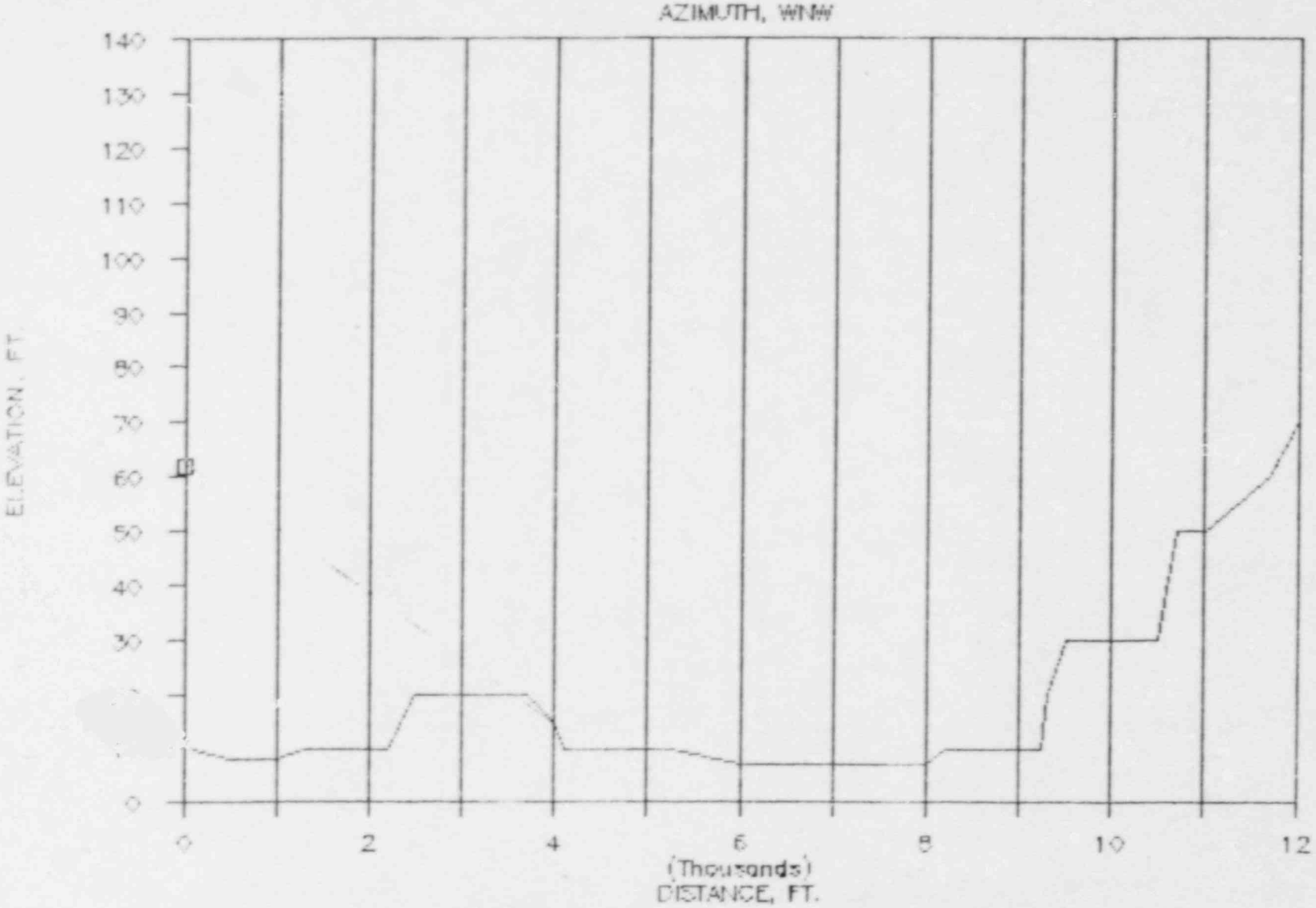


ARTIFICIAL ISLAND 202

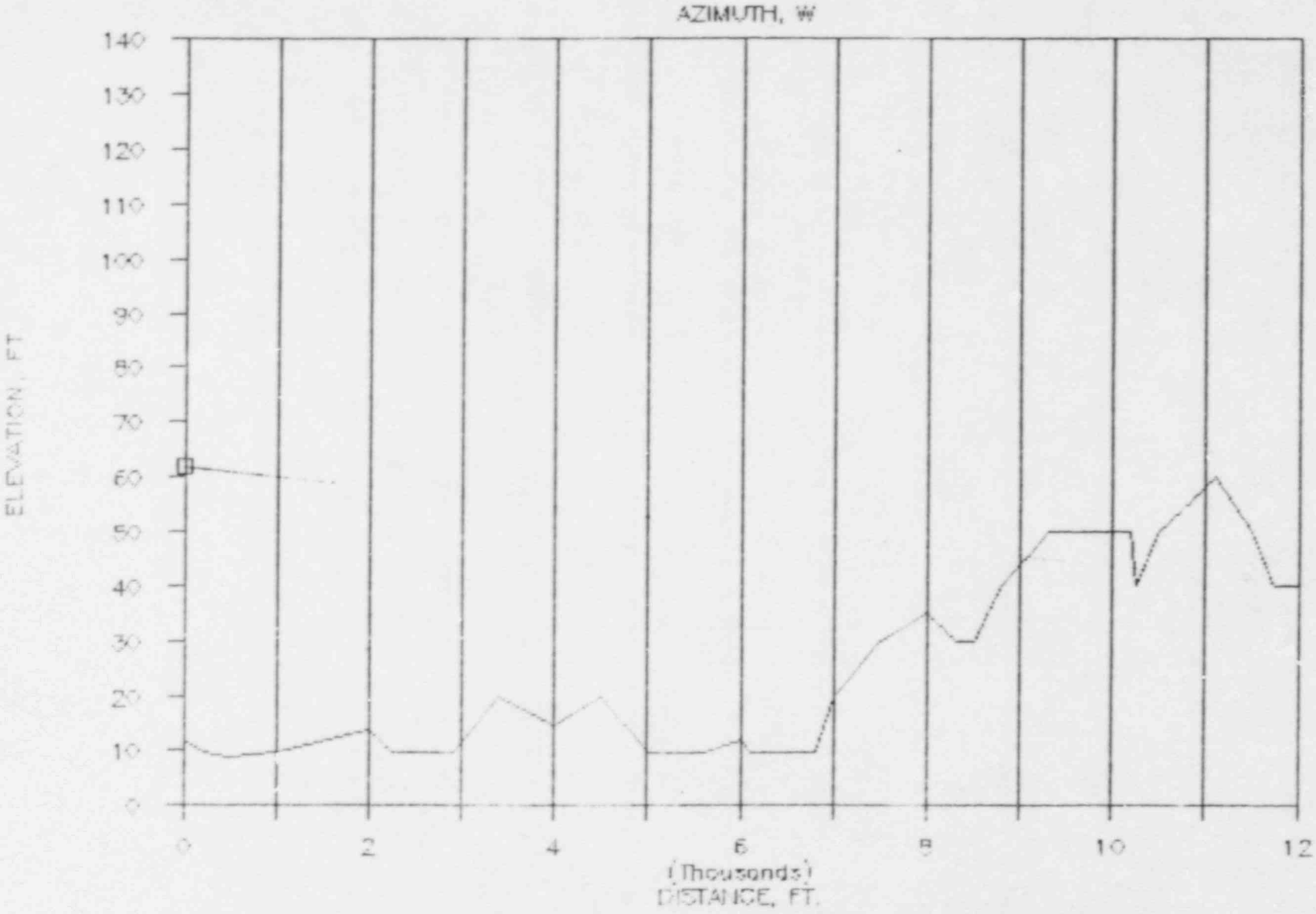
AZIMUTH, NW



ARTIFICIAL ISLAND 202



ARTIFICIAL ISLAND 202



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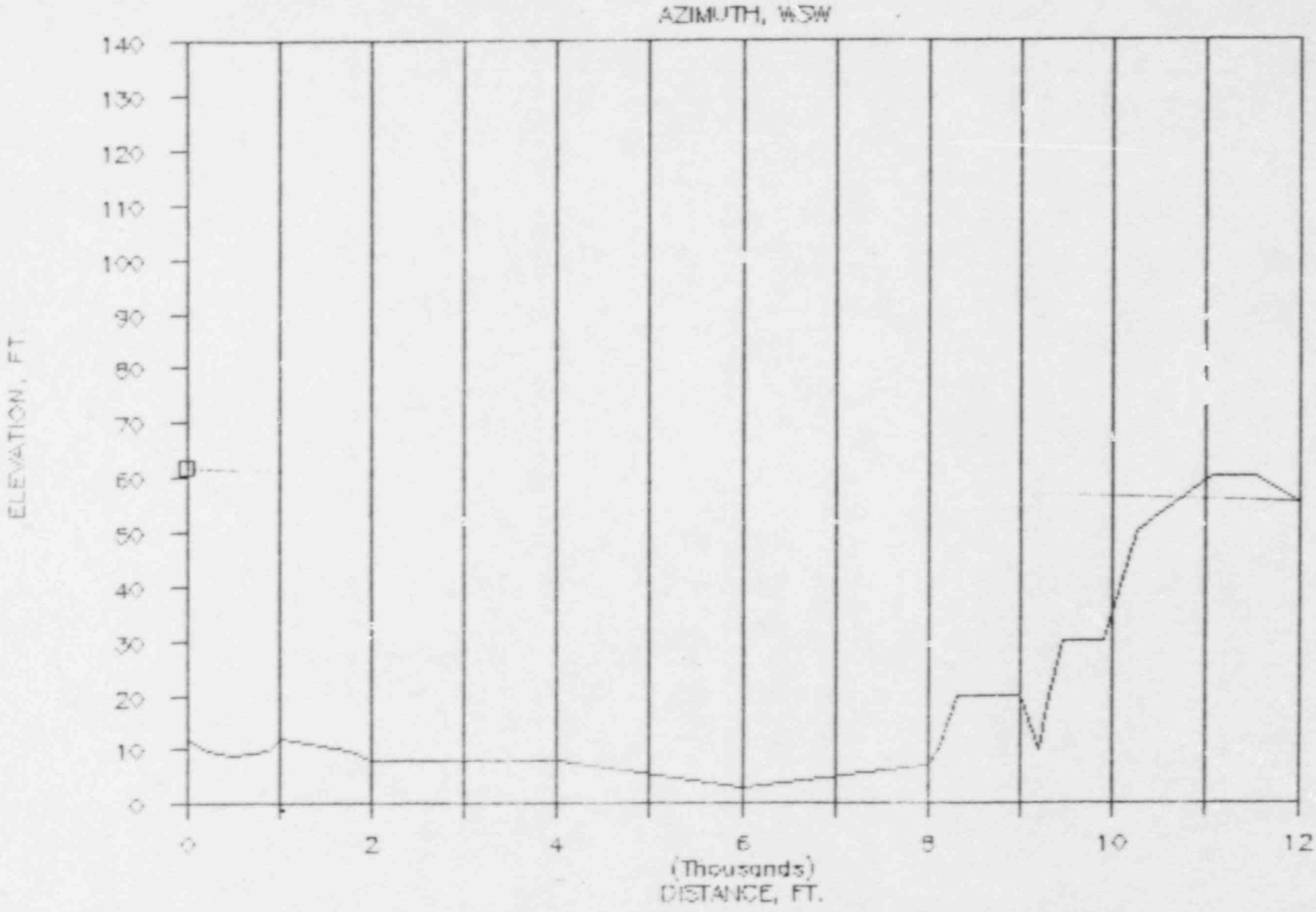
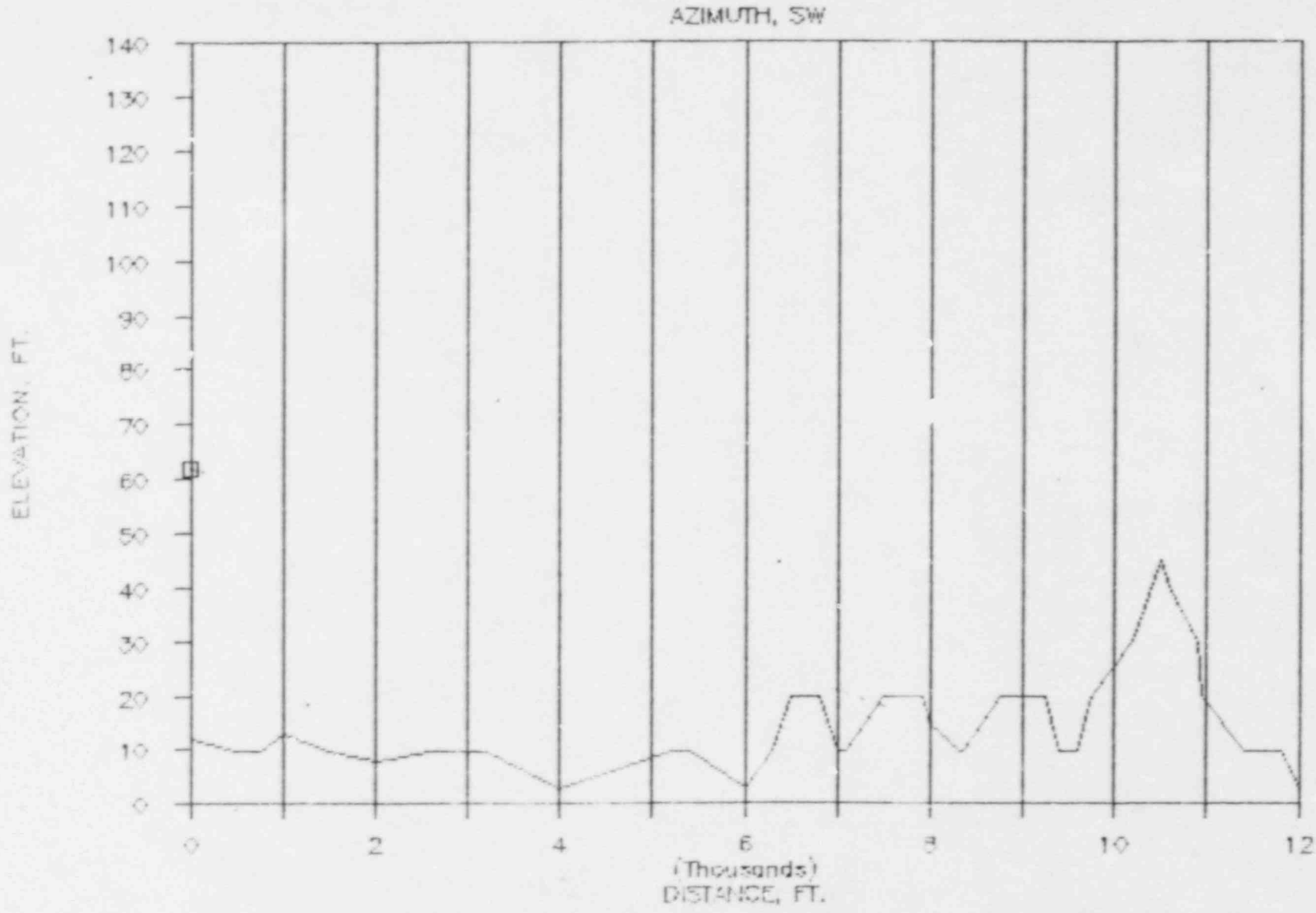
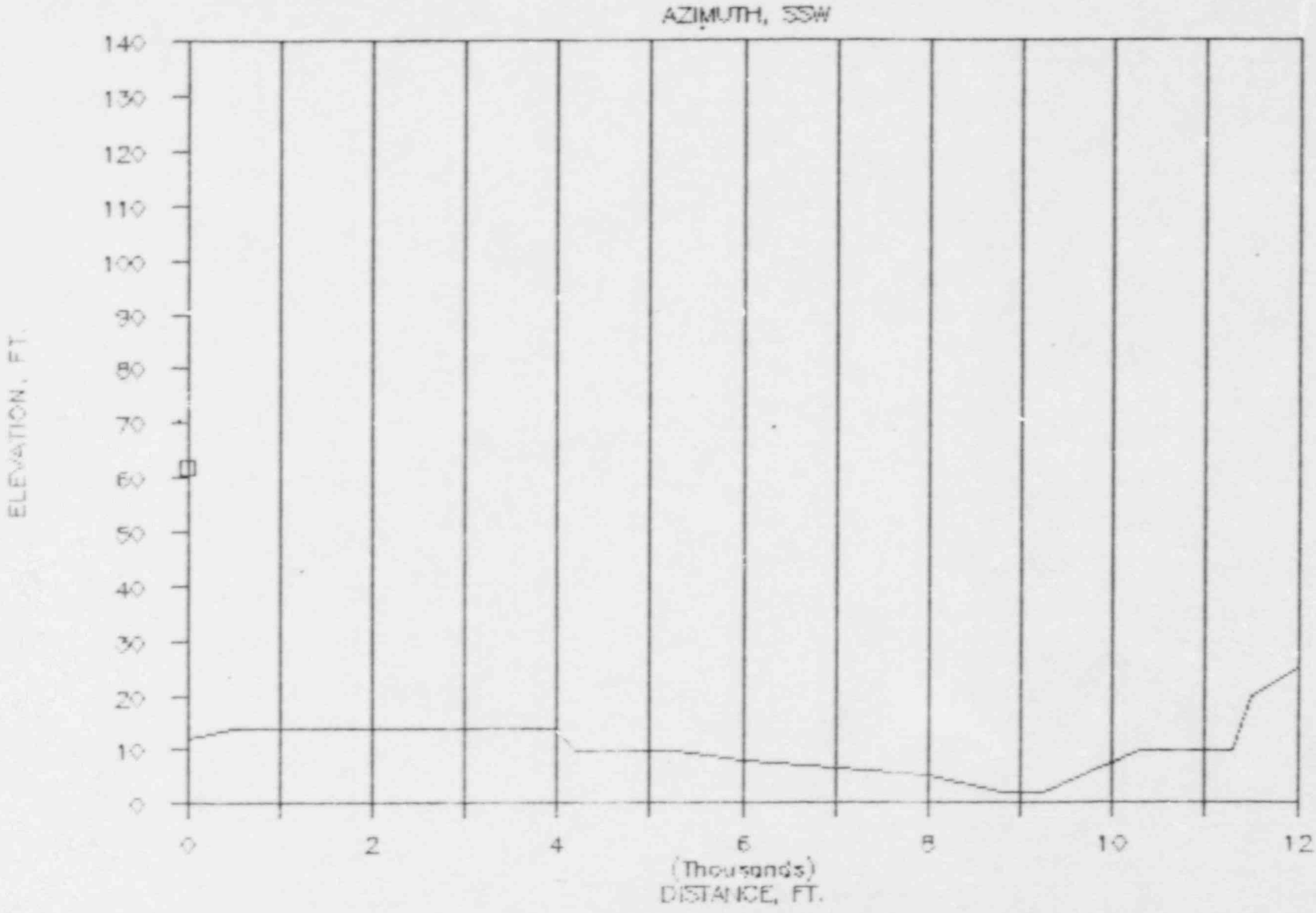


ARTIFICIAL ISLAND 202

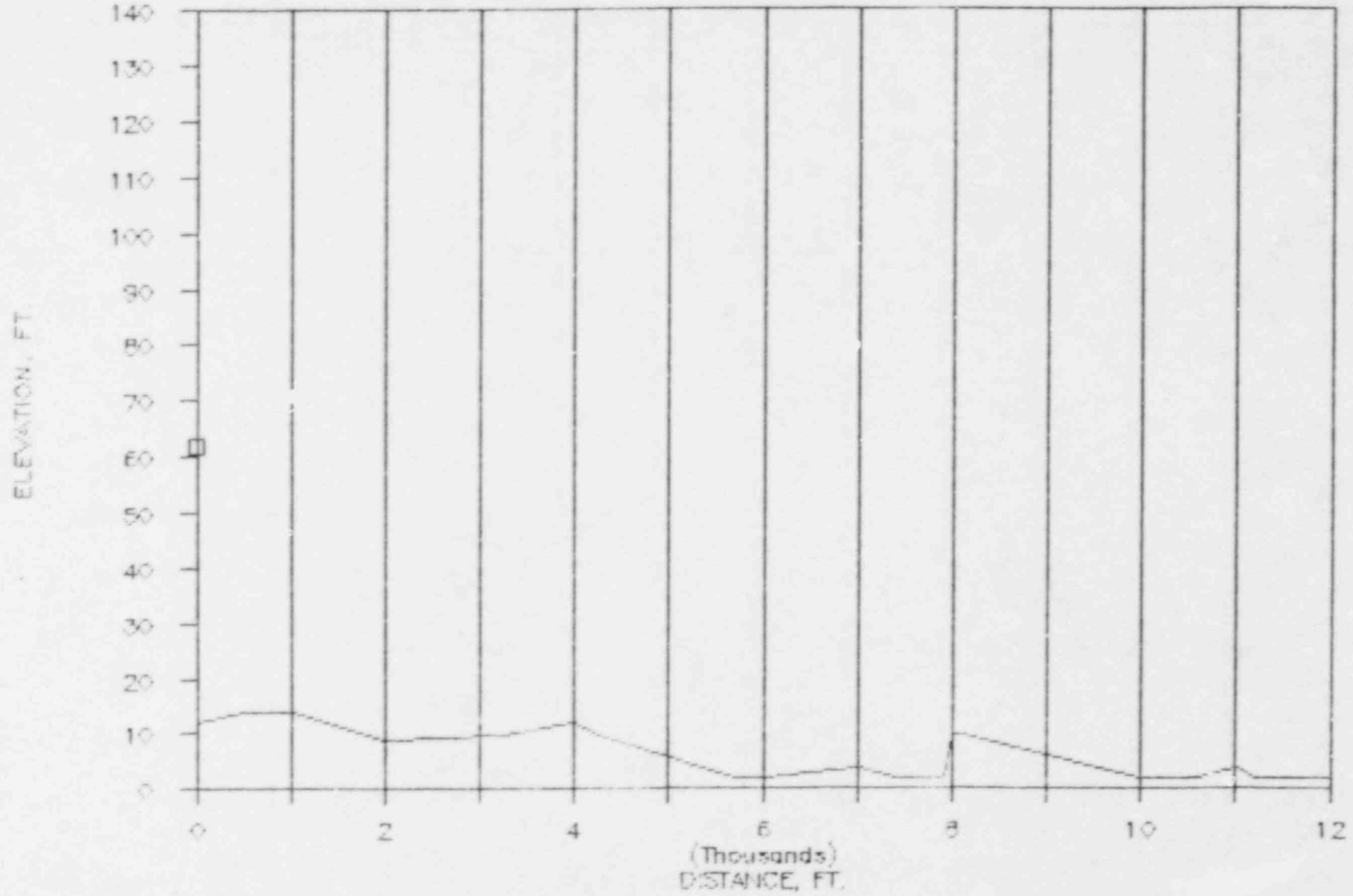


ARTIFICIAL ISLAND 202



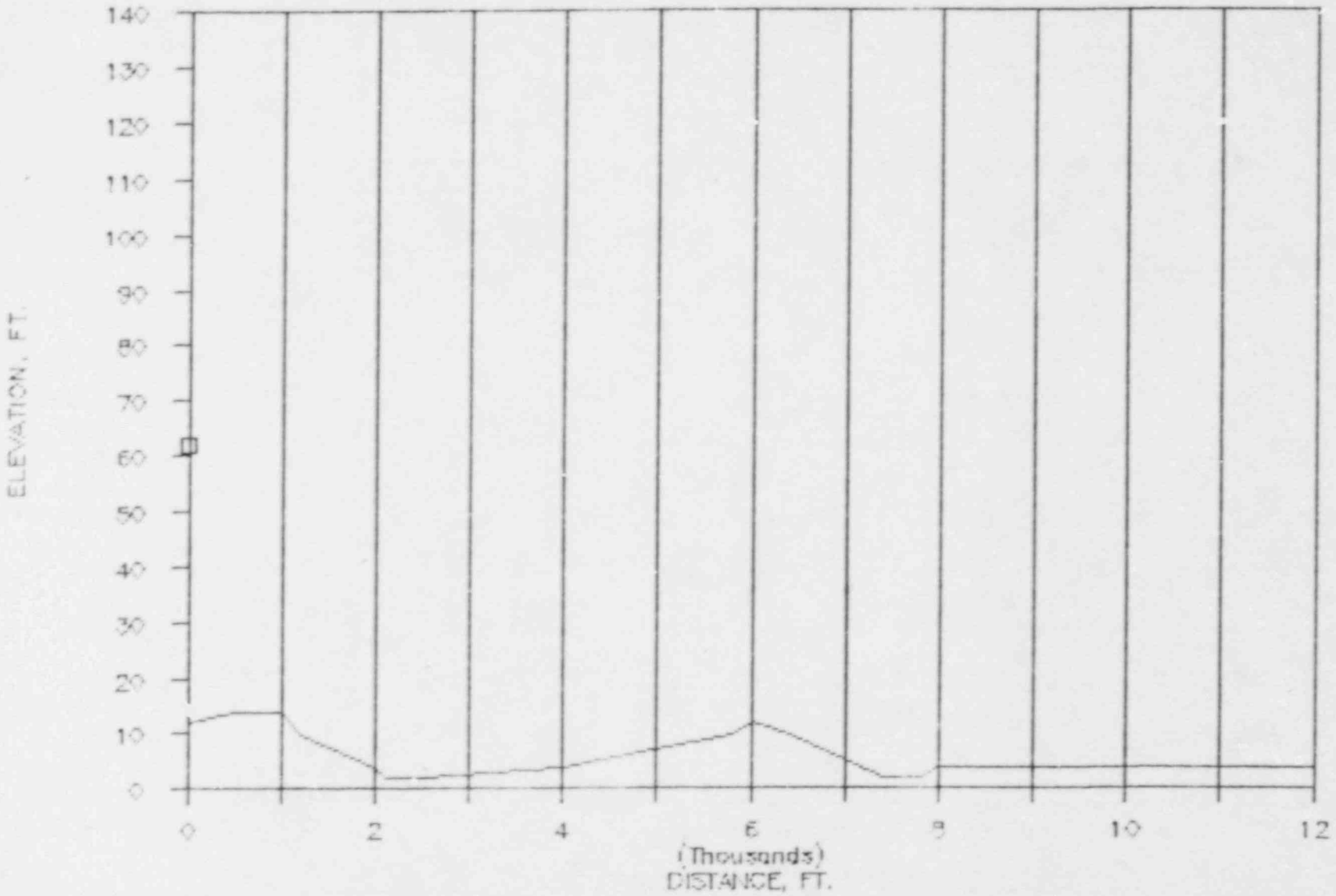
ARTIFICIAL ISLAND 202

AZIMUTH, S



ARTIFICIAL ISLAND 202

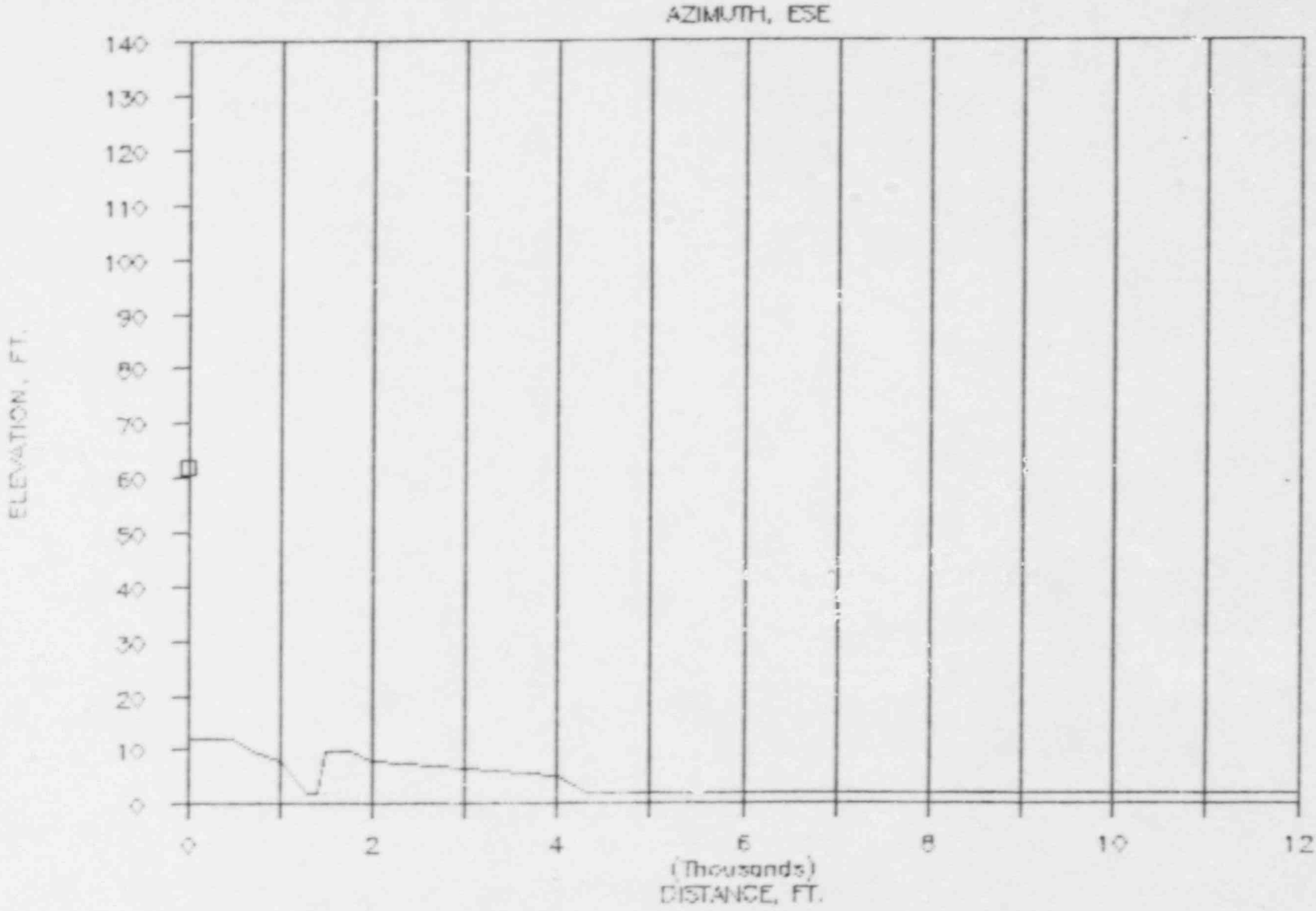
AZIMUTH, SSE



ARTIFICIAL ISLAND 202

AZIMUTH, SE

ARTIFICIAL ISLAND 202



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #202-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	11.00	HARD	0.	NO	0.	0.
2	1000.	90.00	7.00	HARD	0.	NO	0.	0.
3	2000.	90.00	7.00	HARD	0.	NO	0.	0.
4	4000.	90.00	2.00	HARD	0.	NO	0.	0.
5	6000.	90.00	2.00	HARD	0.	NO	0.	0.
6	8000.	90.00	2.00	HARD	0.	NO	0.	0.
7	12000.	90.00	2.00	HARD	0.	NO	0.	0.
8	500.	67.50	12.00	HARD	0.	NO	0.	0.
9	1000.	67.50	7.00	HARD	0.	NO	0.	0.
10	2000.	67.50	2.00	HARD	0.	NO	0.	0.
11	4000.	67.50	2.00	HARD	0.	NO	0.	0.
12	6000.	67.50	2.00	HARD	0.	NO	0.	0.
13	8000.	67.50	4.00	HARD	0.	NO	0.	0.
14	12000.	67.50	2.00	HARD	0.	NO	0.	0.
15	500.	45.00	12.00	HARD	0.	NO	0.	0.
16	1000.	45.00	7.00	HARD	0.	NO	0.	0.
17	2000.	45.00	2.00	HARD	0.	NO	0.	0.
18	4000.	45.00	2.00	HARD	0.	NO	0.	0.
19	6000.	45.00	2.00	HARD	0.	NO	0.	0.
20	8000.	45.00	4.00	HARD	0.	NO	0.	0.
21	12000.	45.00	2.00	HARD	0.	NO	0.	0.
22	500.	22.50	9.00	HARD	0.	NO	0.	0.
23	1000.	22.50	7.00	HARD	0.	NO	0.	0.
24	2000.	22.50	4.00	HARD	0.	NO	0.	0.
25	4000.	22.50	2.00	HARD	0.	NO	0.	0.
26	6000.	22.50	2.00	HARD	0.	NO	0.	0.
27	8000.	22.50	2.00	HARD	0.	NO	0.	0.
28	12000.	22.50	2.00	HARD	0.	NO	0.	0.
29	500.	.00	8.00	HARD	0.	NO	0.	0.
30	1000.	.00	6.00	HARD	0.	NO	0.	0.
31	2000.	.00	4.00	HARD	0.	NO	0.	0.
32	4000.	.00	2.00	HARD	0.	NO	0.	0.
33	6000.	.00	2.00	HARD	0.	NO	0.	0.
34	8000.	.00	2.00	HARD	0.	NO	0.	0.
35	12000.	.00	2.00	HARD	0.	NO	0.	0.
36	500.	337.50	8.00	HARD	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	6.00	HARD	0.	NO	0.	0.
38	2000.	337.50	4.00	HARD	0.	NO	0.	0.
39	4000.	337.50	4.00	HARD	0.	NO	0.	0.
40	6000.	337.50	2.00	HARD	0.	NO	0.	0.
41	8000.	337.50	2.00	HARD	0.	NO	0.	0.
42	12000.	337.50	2.00	HARD	0.	NO	0.	0.
43	500.	315.00	8.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	6.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	12.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	2.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	2.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	4.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	8.00	SOFT	0.	YES	10750.	20.
50	500.	292.50	8.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	8.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	10.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	15.00	SOFT	0.	YES	3700.	20.
54	6000.	292.50	7.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	7.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	70.00	SOFT	0.	NO	0.	0.
57	500.	270.00	9.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	10.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	14.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	15.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	12.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	35.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	40.00	SOFT	0.	YES	11100.	60.
64	500.	247.50	9.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	12.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	8.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	8.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	3.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	7.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	55.00	SOFT	0.	YES	11550.	60.
71	500.	225.00	10.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	13.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	8.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	3.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	3.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	15.00	SOFT	0.	YES	7900.	20.
77	12000.	225.00	3.00	SOFT	0.	YES	10500.	45.
78	500.	202.50	14.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	14.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	14.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	14.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	8.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	5.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	25.00	SOFT	0.	NO	0.	0.
85	500.	180.00	14.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	14.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	9.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	12.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	12.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	10.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	2.00	SOFT	0.	NO	0.	0.
92	500.	157.50	14.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	14.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	4.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	4.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	12.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	4.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	4.00	SOFT	0.	NO	0.	0.
99	500.	135.00	14.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	9.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	4.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	4.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	7.00	SOFT	0.	YES	5800.	18.
104	8000.	135.00	7.00	SOFT	0.	NO	0.	0.
105	12000.	135.00	2.00	SOFT	0.	YES	10700.	12.
106	500.	112.50	12.00	HARD	0.	NO	0.	0.
107	1000.	112.50	8.00	HARD	0.	NO	0.	0.
108	2000.	112.50	8.00	HARD	0.	NO	0.	0.
109	4000.	112.50	5.00	HARD	0.	NO	0.	0.
110	6000.	112.50	2.00	HARD	0.	NO	0.	0.
111	8000.	112.50	2.00	HARD	0.	NO	0.	0.
112	12000.	112.50	2.00	HARD	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #202-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 12.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #202-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

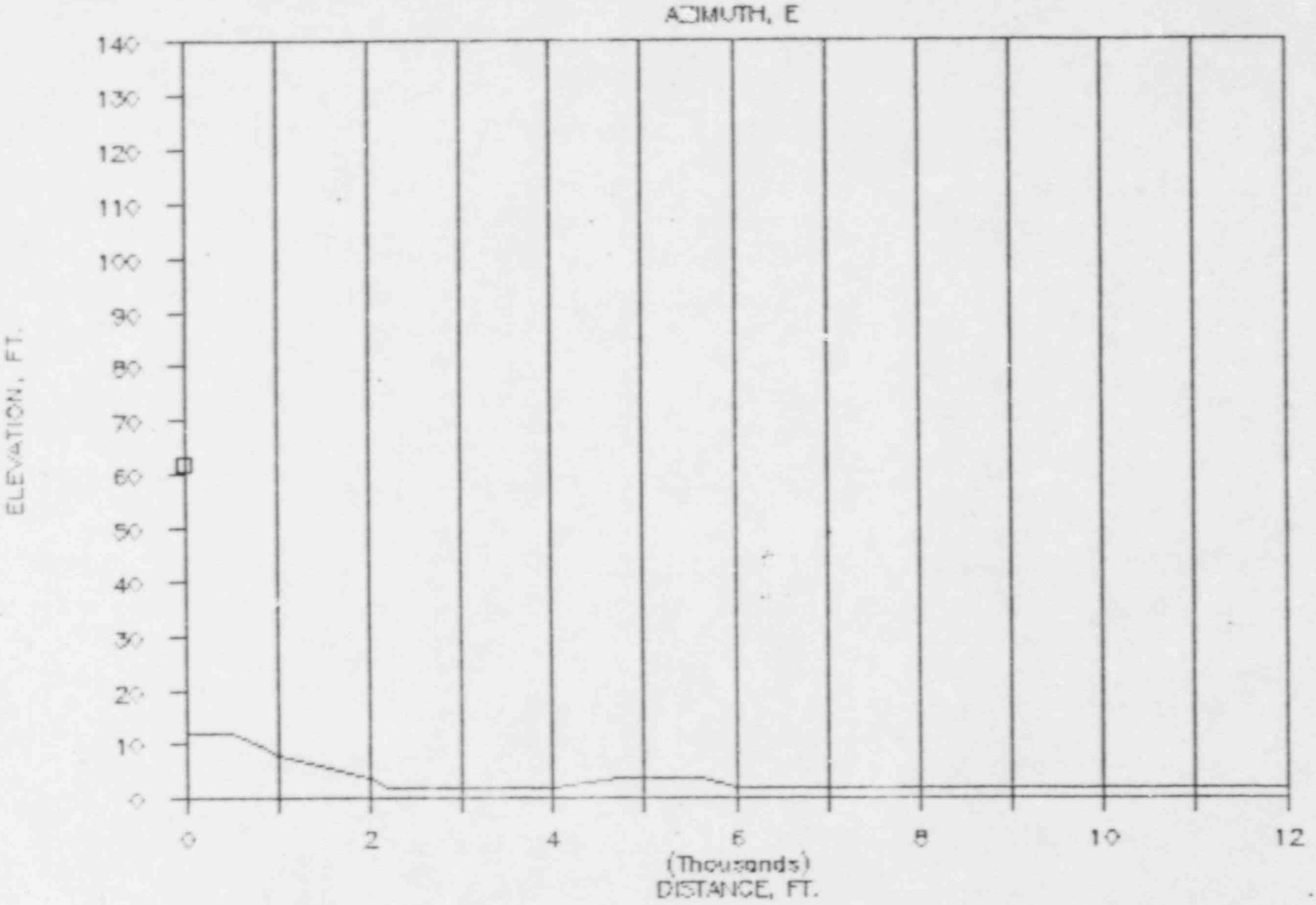
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND AWS SIREN #202-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

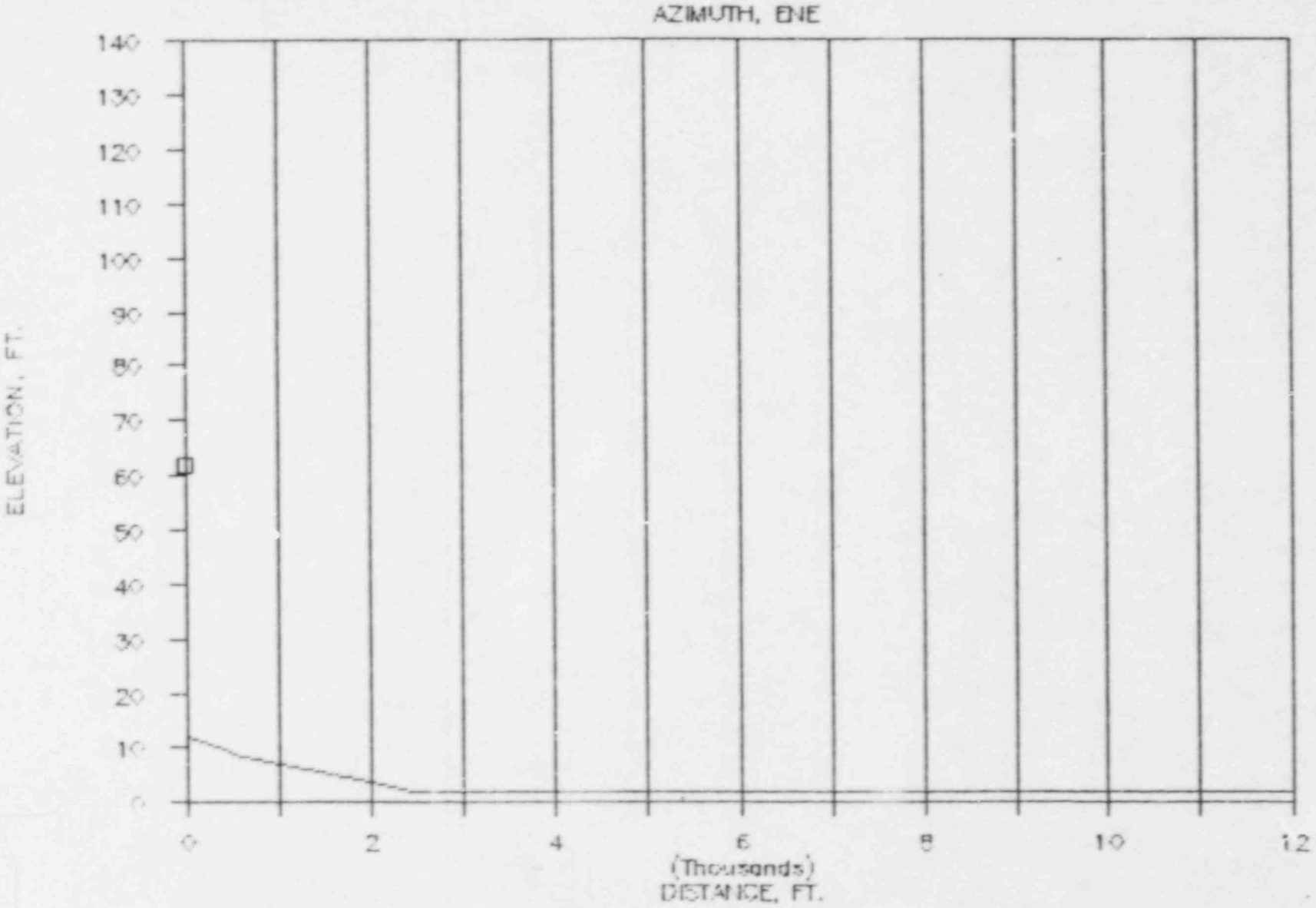
DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	108.	101.	93.	85.	80.	75.	68.
ENE	108.	101.	93.	85.	80.	75.	68.
NE	108.	101.	93.	85.	80.	75.	68.
NNE	108.	101.	87.	66.	51.	46.	38.
N	108.	100.	85.	62.	50.	45.	38.
NNW	108.	99.	84.	60.	50.	45.	38.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	80.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	80.	76.	66.	57.
SSW	107.	97.	87.	80.	76.	72.	66.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	68.	72.	61.
ESE	108.	101.	93.	85.	80.	75.	68.

ARTIFICIAL ISLAND 204



ARTIFICIAL ISLAND 204



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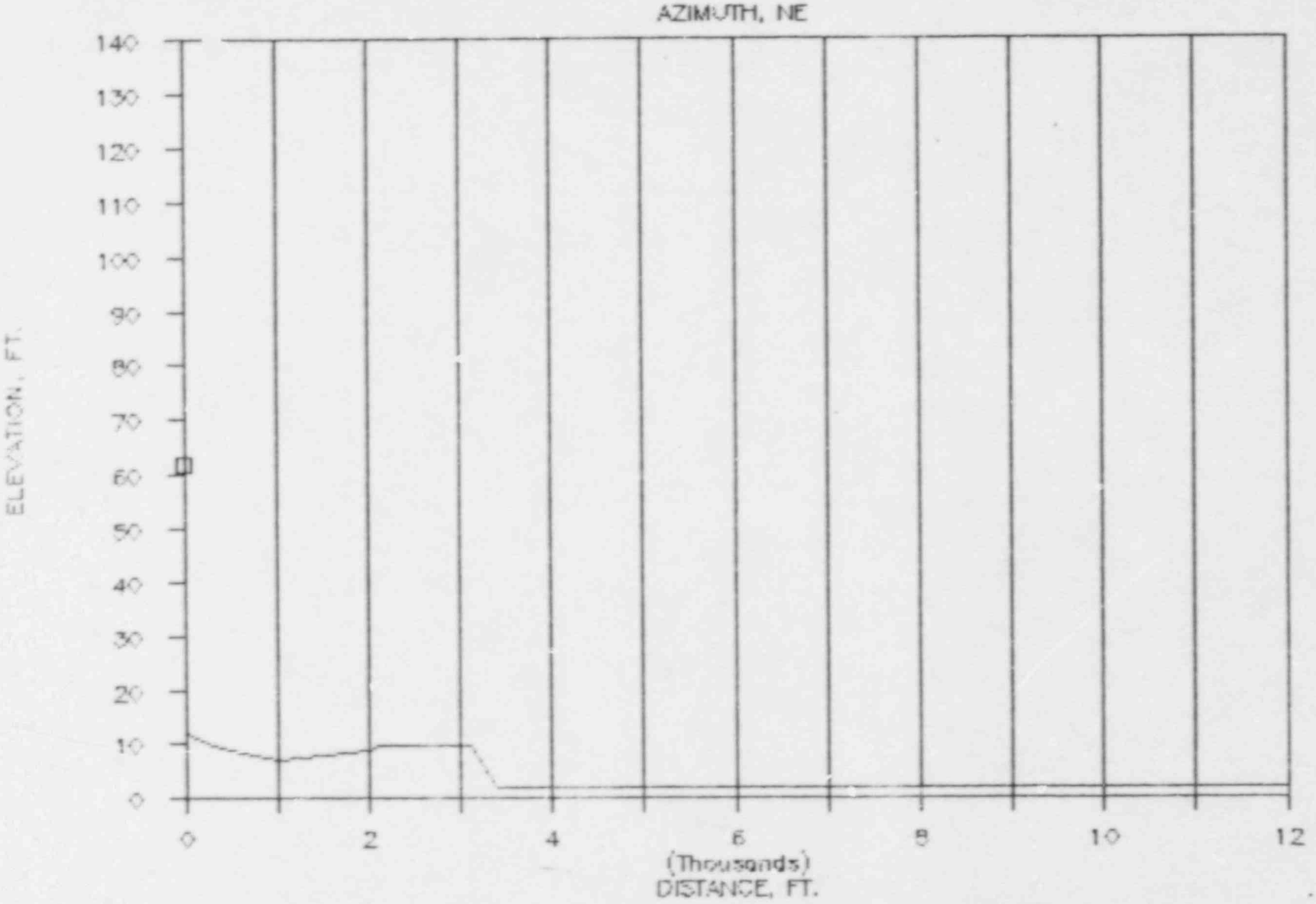

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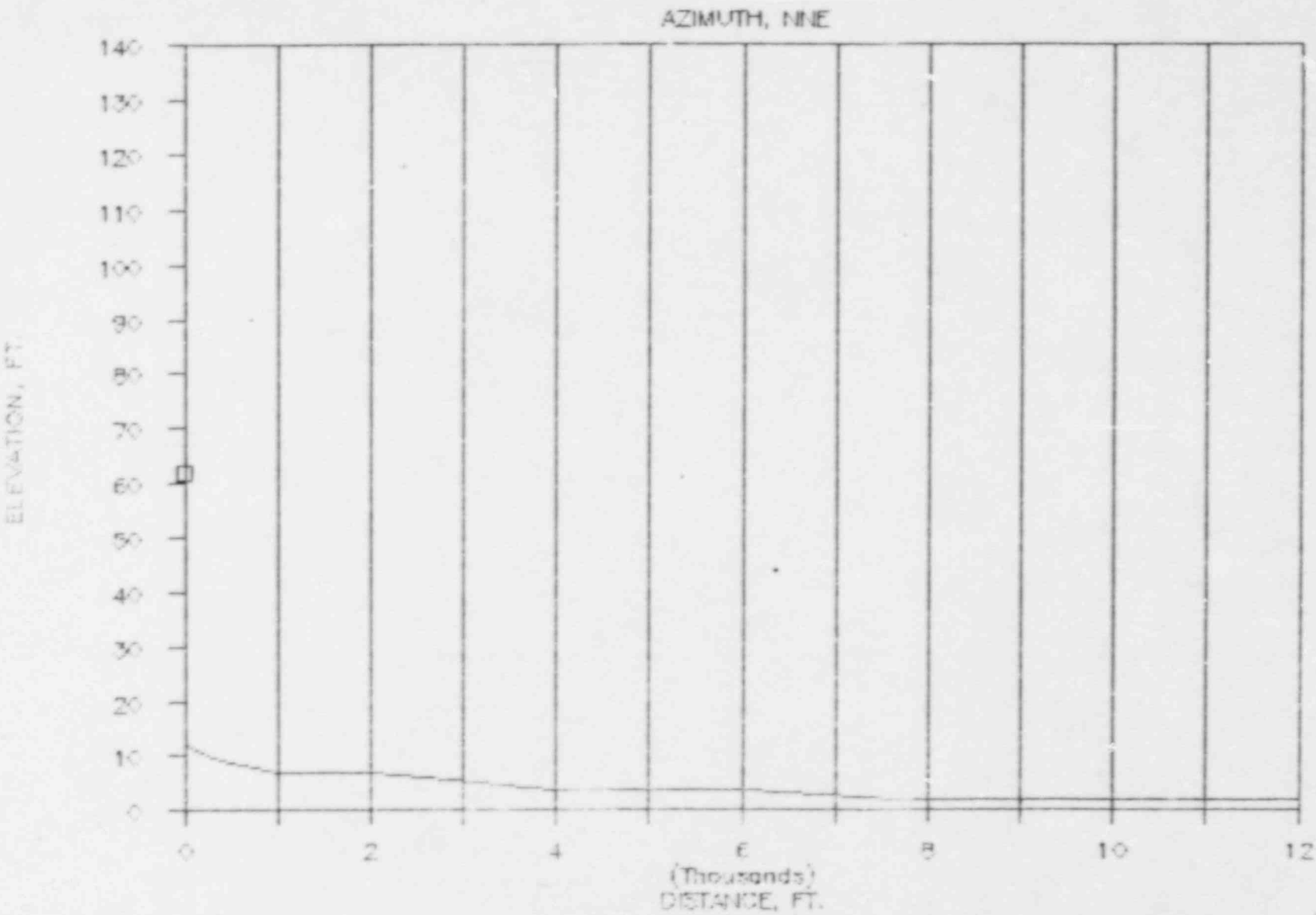

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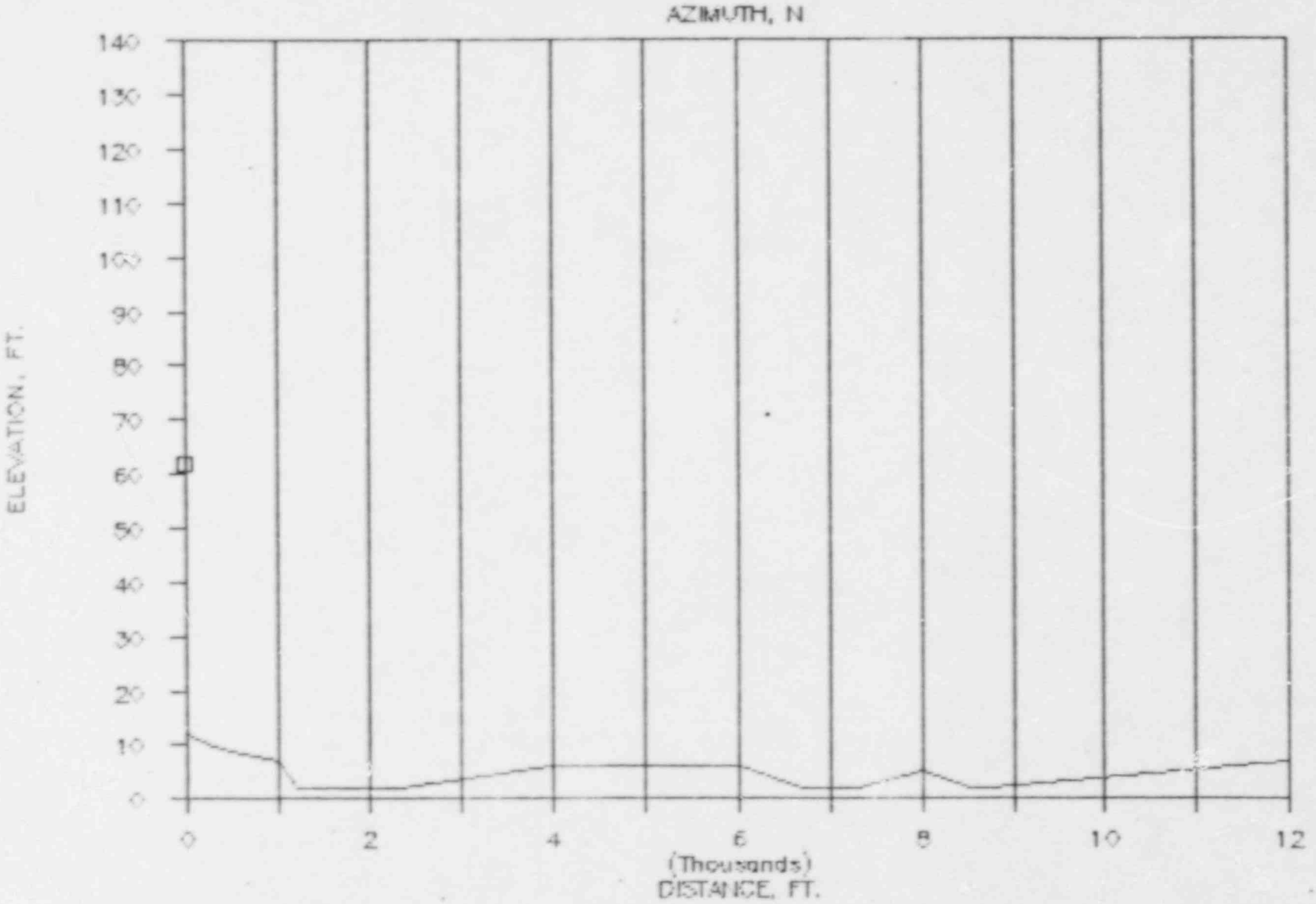

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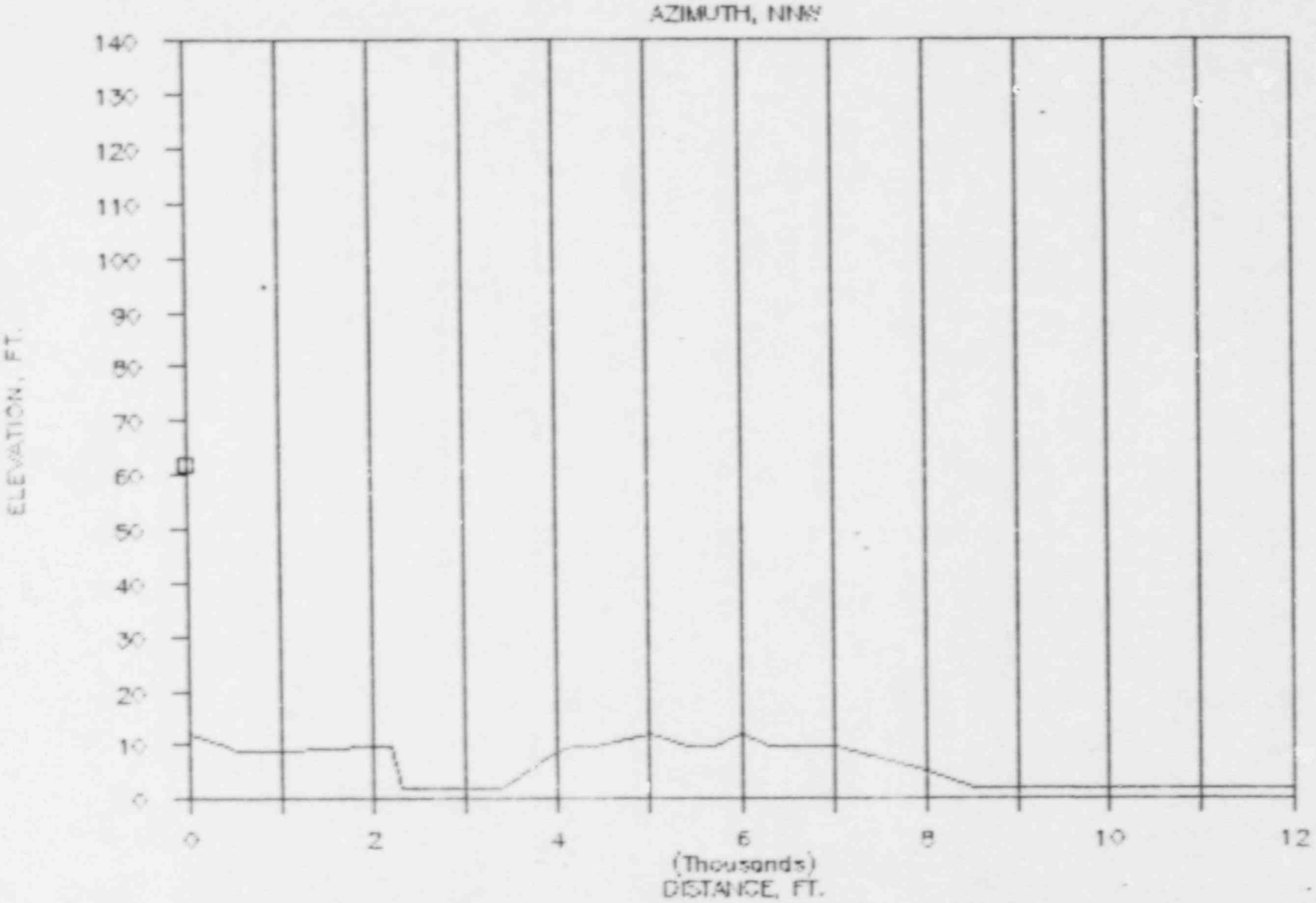

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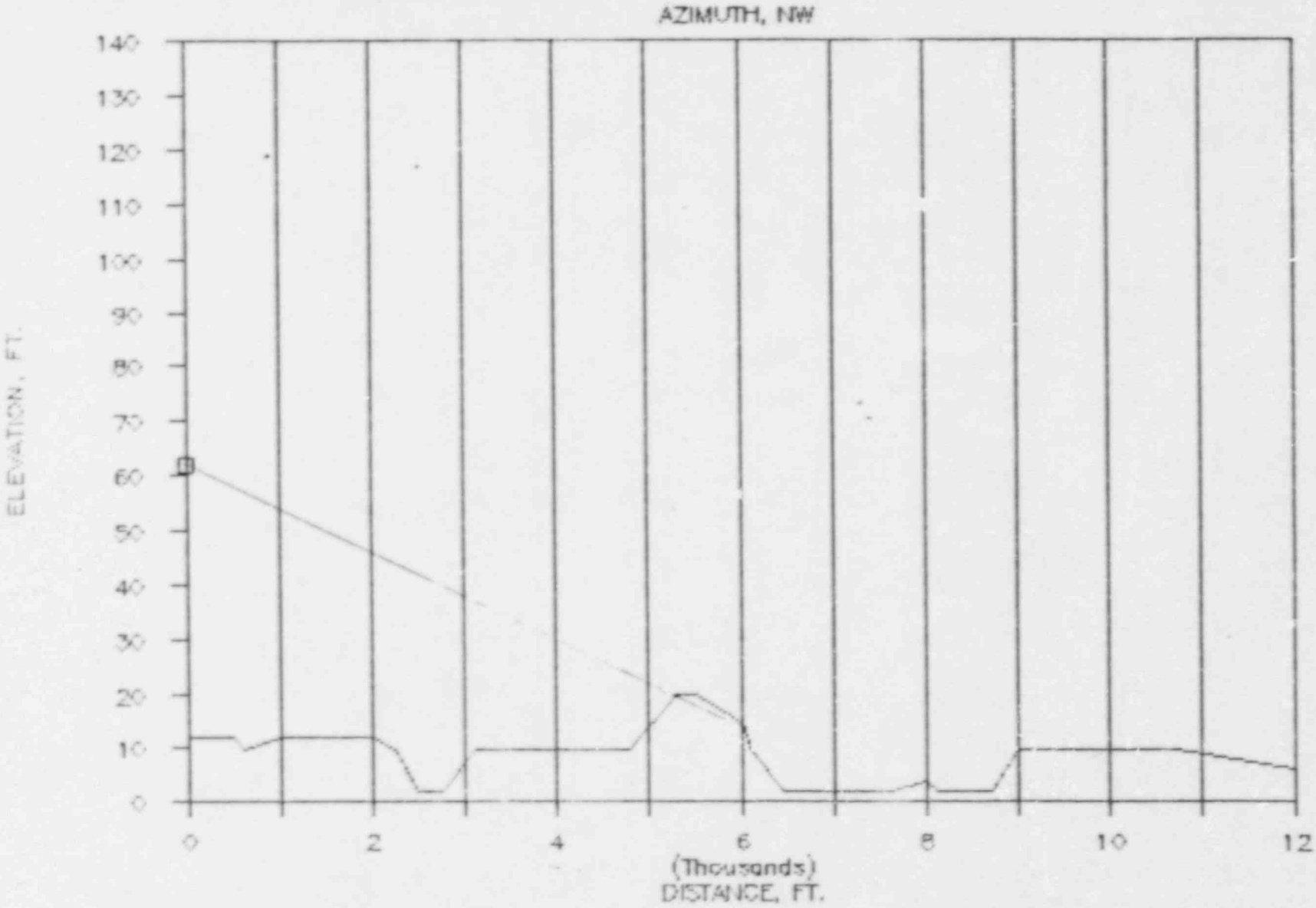
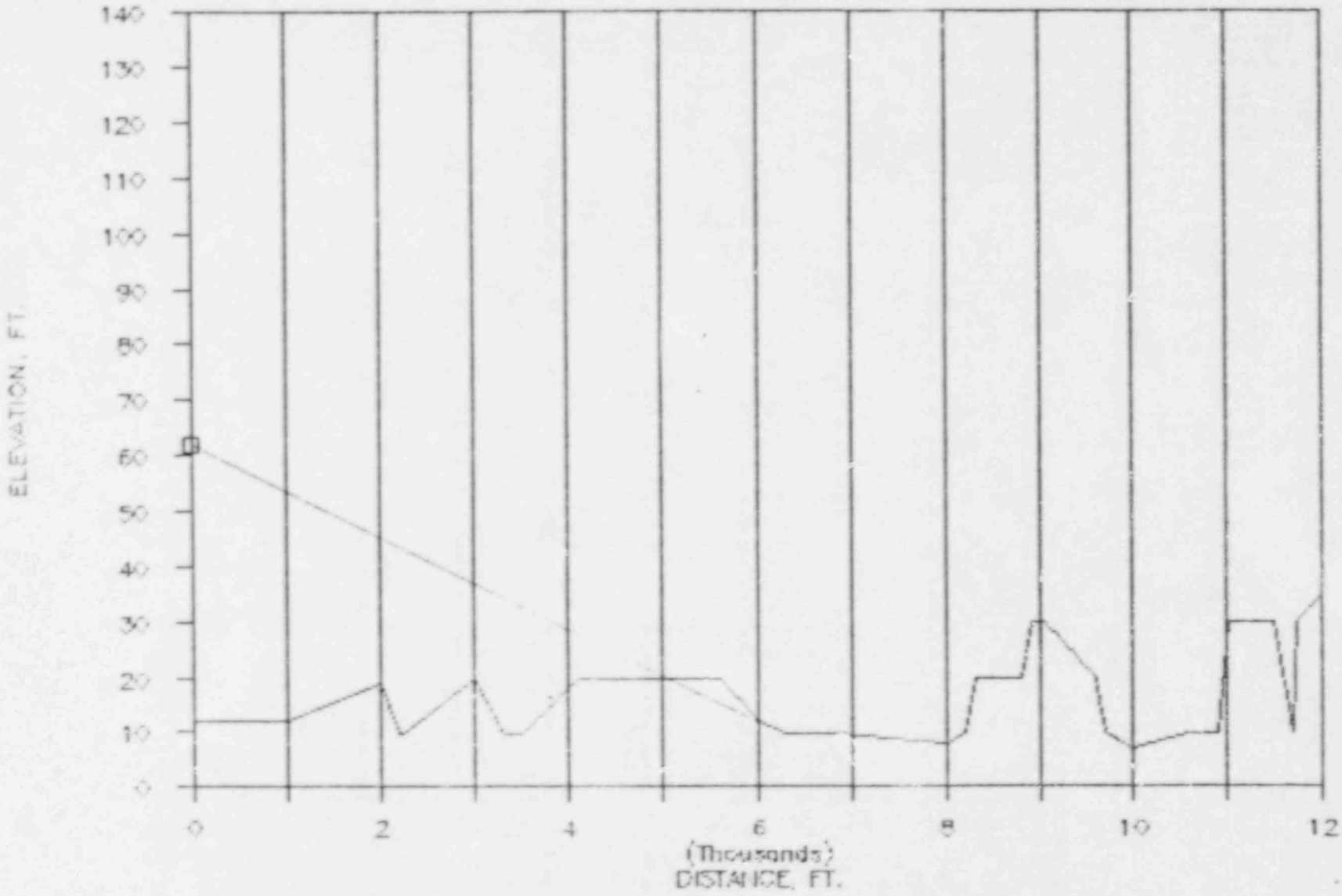


ARTIFICIAL ISLAND 204

AZIMUTH, WNW



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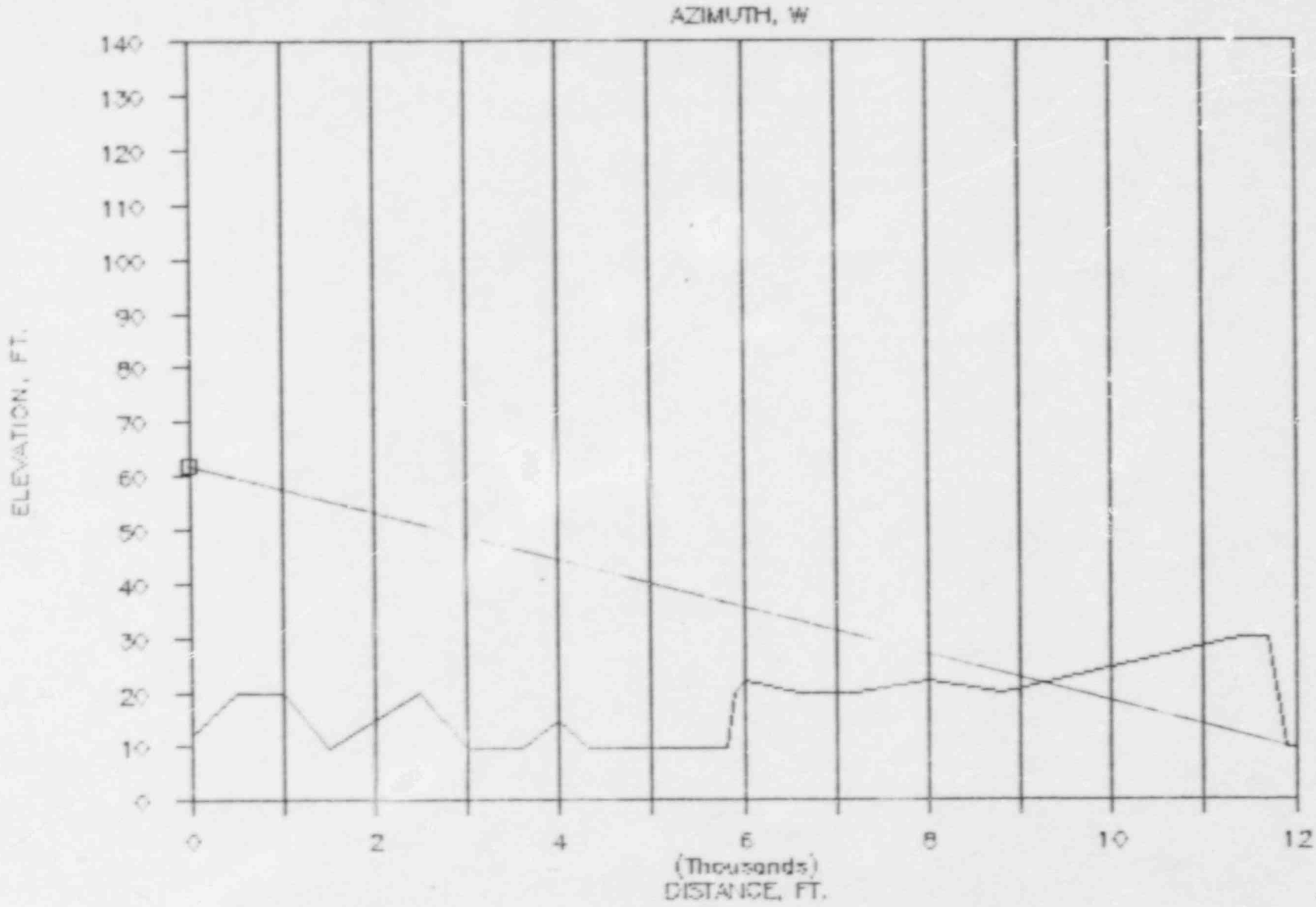

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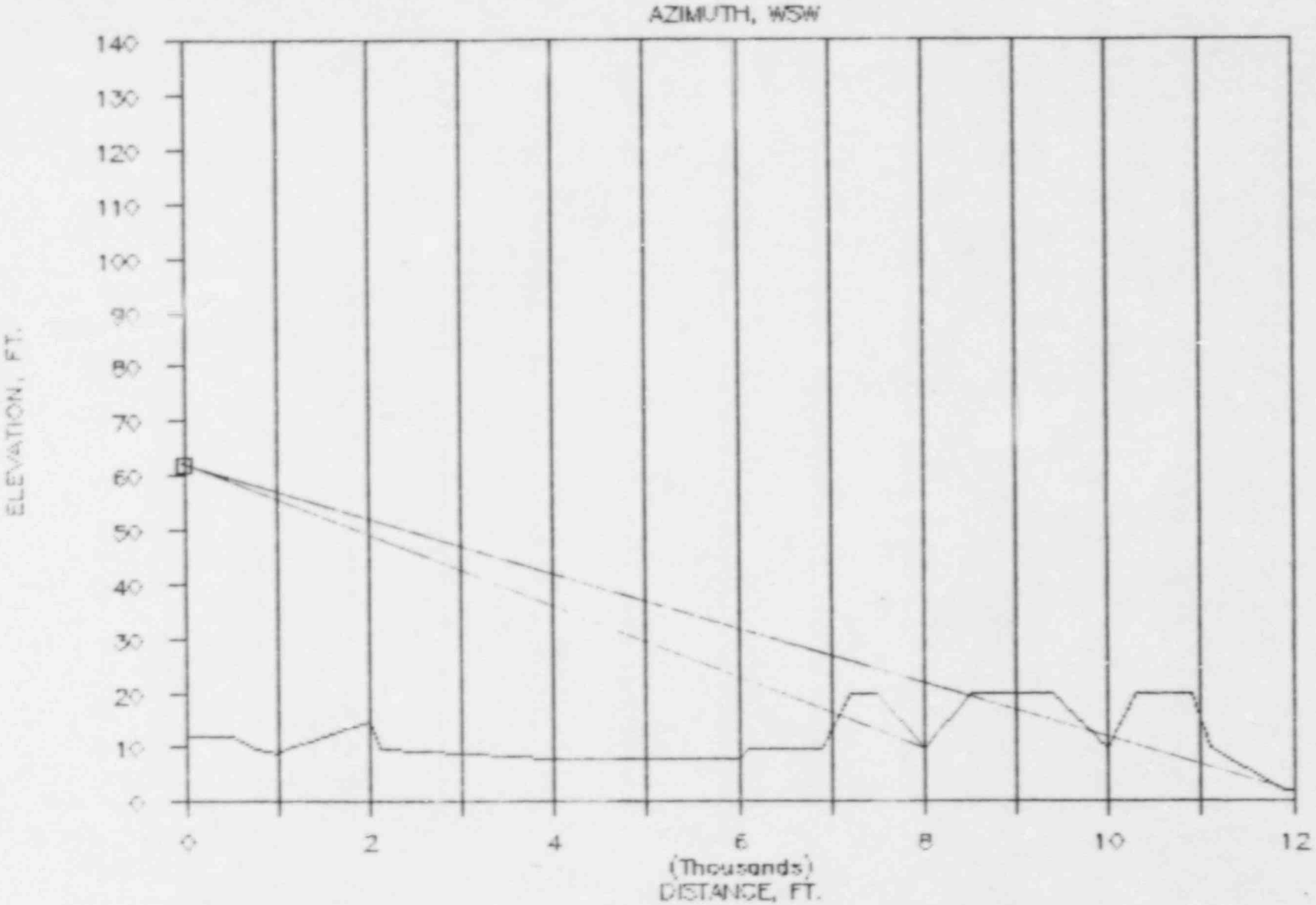

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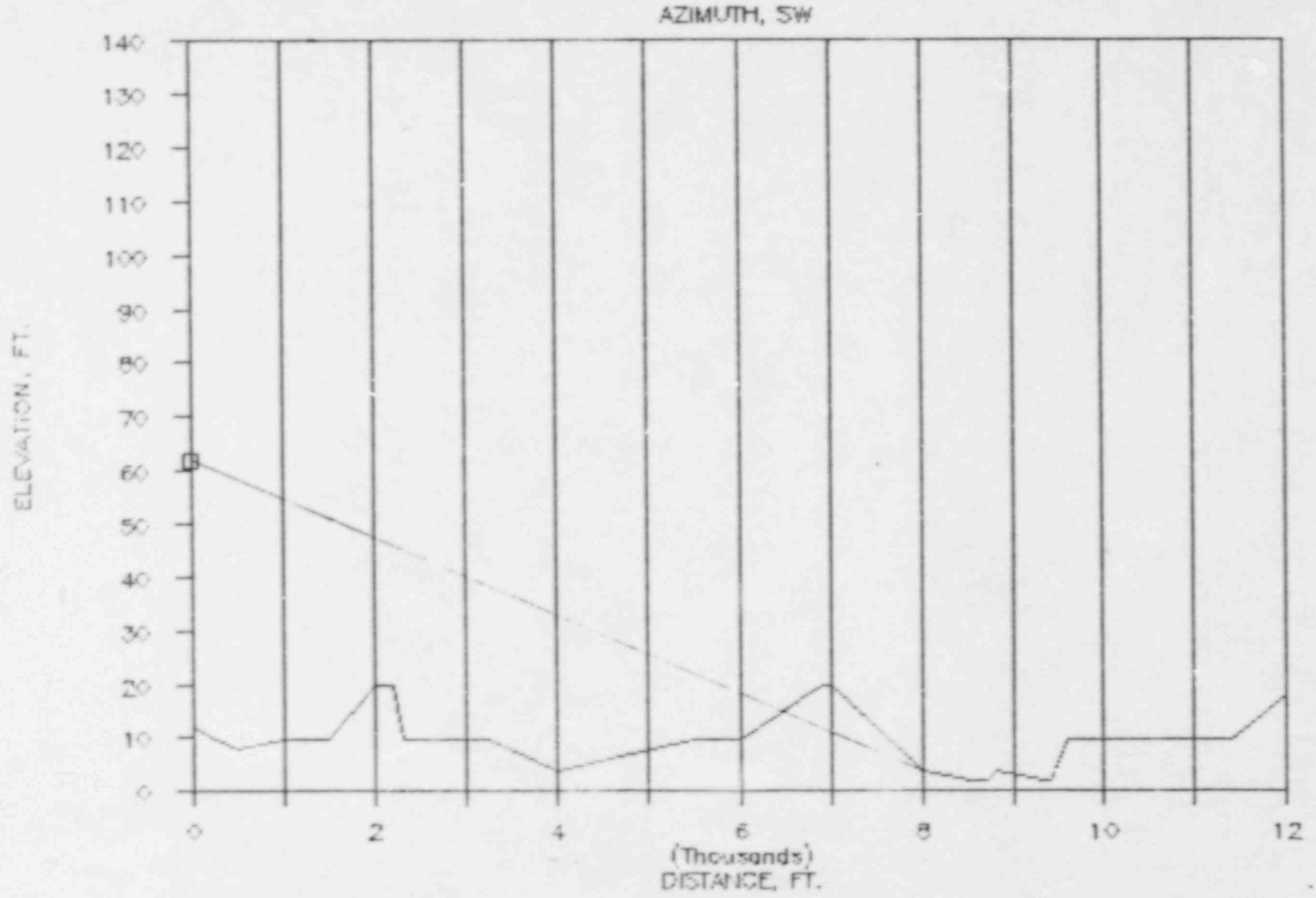
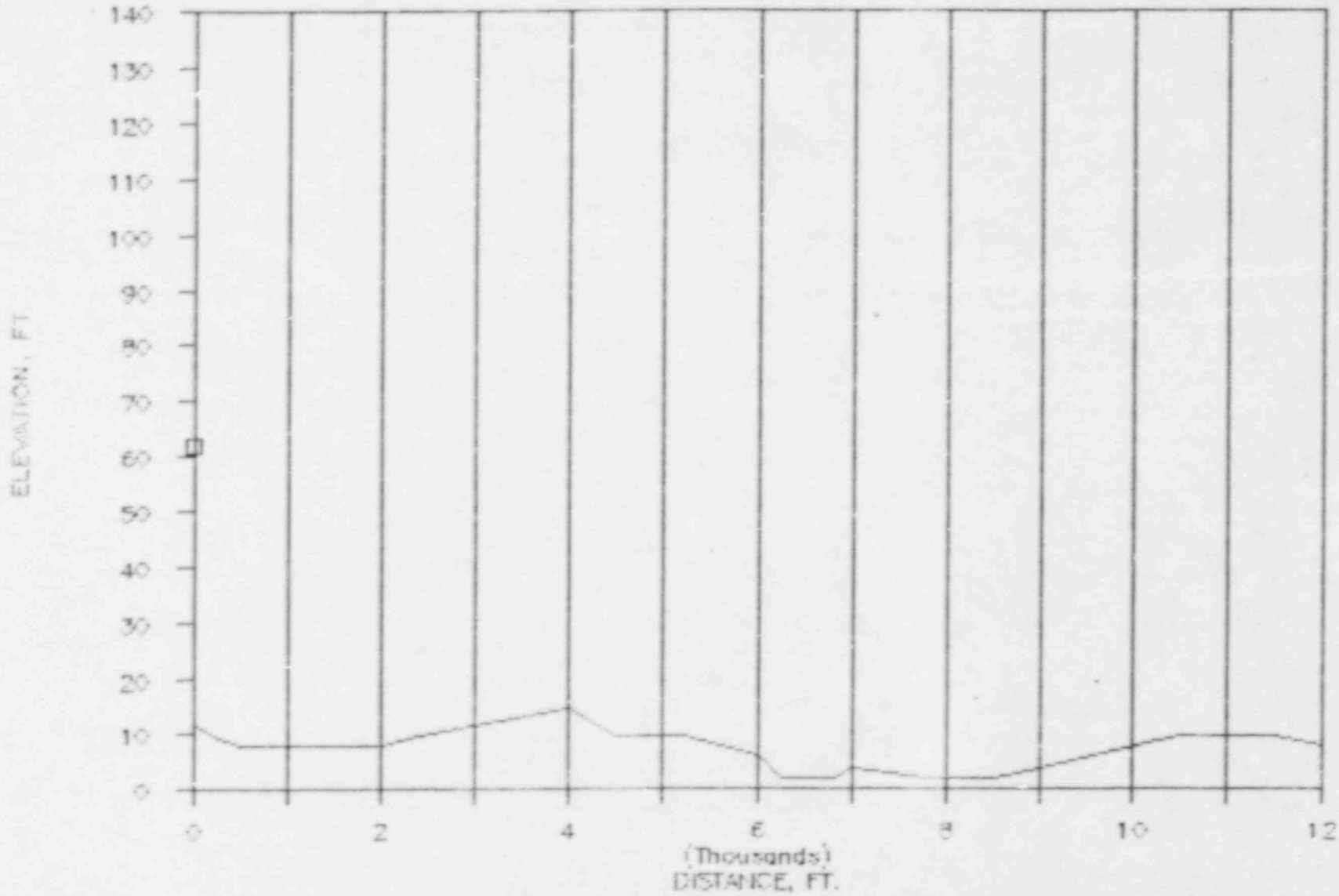


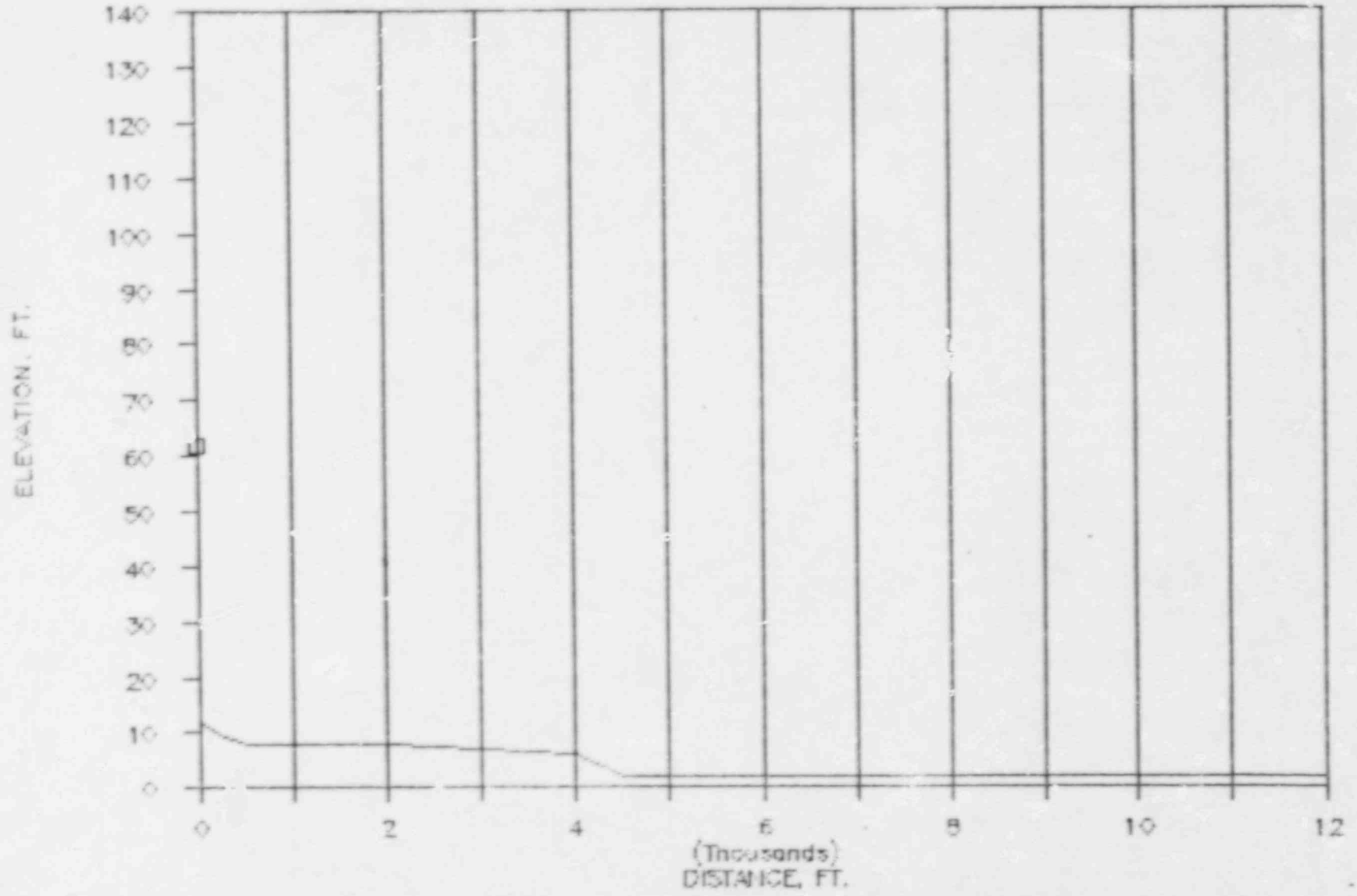
ARTIFICIAL ISLAND 204

AZIMUTH, SSW



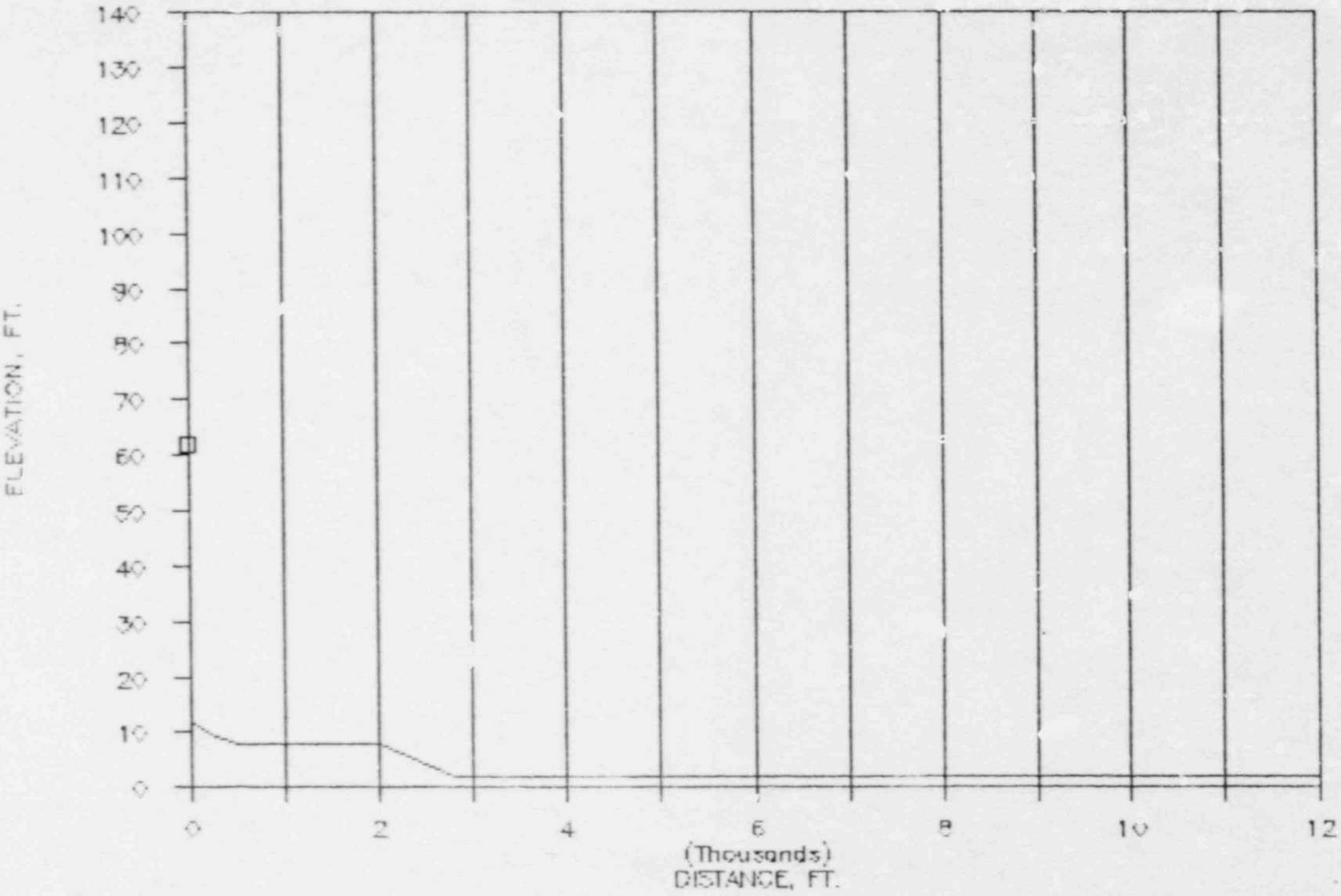
ARTIFICIAL ISLAND 204

AZIMUTH, S



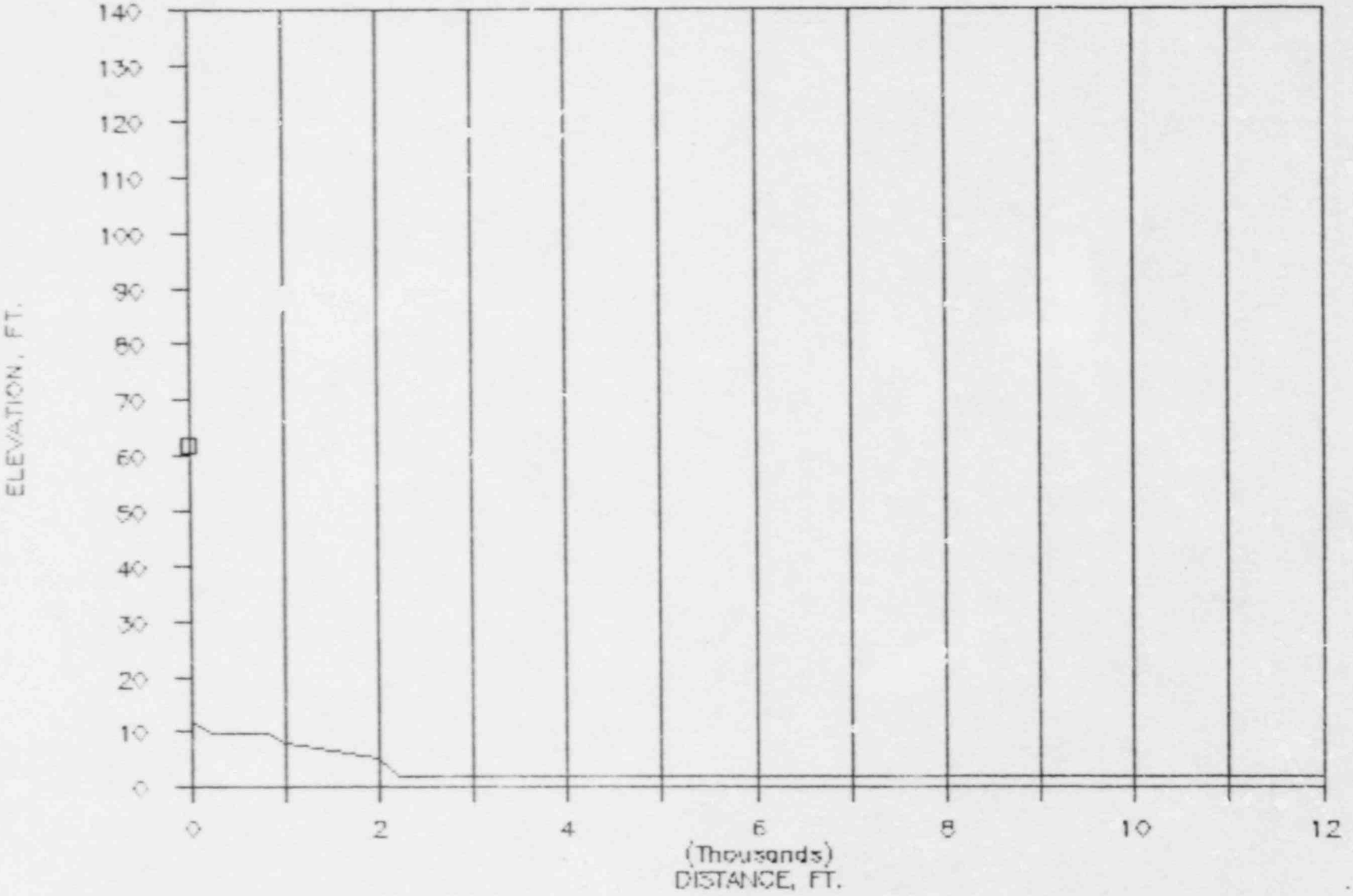
ARTIFICIAL ISLAND 204

AZIMUTH, SSE



ARTIFICIAL ISLAND 204

AZIMUTH, SE



ARTIFICIAL ISLAND 204

AZIMUTH, ESE

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #204-CYCLONE
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	12.00	HARD	0.	NO	0.	0.
2	1000.	90.00	8.00	HARD	0.	NO	0.	0.
3	2000.	90.00	4.00	HARD	0.	NO	0.	0.
4	4000.	90.00	2.00	HARD	0.	NO	0.	0.
5	6000.	90.00	2.00	HARD	0.	NO	0.	0.
6	8000.	90.00	2.00	HARD	0.	NO	0.	0.
7	12000.	90.00	2.00	HARD	0.	NO	0.	0.
8	500.	67.50	9.00	HARD	0.	NO	0.	0.
9	1000.	67.50	7.00	HARD	0.	NO	0.	0.
10	2000.	67.50	4.00	HARD	0.	NO	0.	0.
11	4000.	67.50	2.00	HARD	0.	NO	0.	0.
12	6000.	67.50	2.00	HARD	0.	NO	0.	0.
13	8000.	67.50	2.00	HARD	0.	NO	0.	0.
14	12000.	67.50	2.00	HARD	0.	NO	0.	0.
15	500.	45.00	9.00	HARD	0.	NO	0.	0.
16	1000.	45.00	7.00	HARD	0.	NO	0.	0.
17	2000.	45.00	9.00	HARD	0.	NO	0.	0.
18	4000.	45.00	2.00	HARD	0.	NO	0.	0.
19	6000.	45.00	2.00	HARD	0.	NO	0.	0.
20	8000.	45.00	2.00	HARD	0.	NO	0.	0.
21	12000.	45.00	2.00	HARD	0.	NO	0.	0.
22	500.	22.50	9.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	7.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	7.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	4.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	4.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	2.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	2.00	SOFT	0.	NO	0.	0.
29	500.	.00	9.00	SOFT	0.	NO	0.	0.
30	1000.	.00	7.00	SOFT	0.	NO	0.	0.
31	2000.	.00	2.00	SOFT	0.	NO	0.	0.
32	4000.	.00	6.00	SOFT	0.	NO	0.	0.
33	6000.	.00	6.00	SOFT	0.	NO	0.	0.
34	8000.	.00	5.00	SOFT	0.	NO	0.	0.
35	12000.	.00	7.00	SOFT	0.	NO	0.	0.
36	500.	337.50	9.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	9.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	10.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	9.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	12.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	5.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	2.00	SOFT	0.	NO	0.	0.
43	500.	315.00	12.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	12.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	12.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	10.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	15.00	SOFT	0.	YES	5500.	20.
48	8000.	315.00	4.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	6.00	SOFT	0.	NO	0.	0.
50	500.	292.50	12.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	12.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	19.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	18.00	SOFT	0.	NO	0.	0.
54	6000.	292.50	12.00	SOFT	0.	YES	3600.	20.
55	8000.	292.50	8.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	35.00	SOFT	0.	NO	0.	0.
57	500.	270.00	20.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	20.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	15.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	15.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	22.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	22.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	10.00	SOFT	0.	YES	11700.	30.
64	500.	247.50	12.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	9.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	15.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	8.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	8.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	10.00	SOFT	0.	YES	7500.	20.
70	12000.	247.50	2.00	SOFT	0.	YES	10900.	20.
71	500.	225.00	8.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	10.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	20.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	4.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	10.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	4.00	SOFT	0.	YES	7000.	20.
77	12000.	225.00	18.00	SOFT	0.	NO	0.	0.
78	500.	202.50	8.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	8.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	8.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	15.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	6.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	2.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	8.00	SOFT	0.	NO	0.	0.
85	500.	180.00	8.00	HARD	0.	NO	0.	0.
86	1000.	180.00	8.00	HARD	0.	NO	0.	0.
87	2000.	180.00	8.00	HARD	0.	NO	0.	0.
88	4000.	180.00	6.00	HARD	0.	NO	0.	0.
89	6000.	180.00	2.00	HARD	0.	NO	0.	0.
90	8000.	180.00	2.00	HARD	0.	NO	0.	0.
91	12000.	180.00	2.00	HARD	0.	NO	0.	0.
92	500.	157.50	8.00	HARD	0.	NO	0.	0.
93	1000.	157.50	8.00	HARD	0.	NO	0.	0.
94	2000.	157.50	8.00	HARD	0.	NO	0.	0.
95	4000.	157.50	2.00	HARD	0.	NO	0.	0.
96	6000.	157.50	2.00	HARD	0.	NO	0.	0.
97	8000.	157.50	2.00	HARD	0.	NO	0.	0.
98	12000.	157.50	2.00	HARD	0.	NO	0.	0.
99	500.	135.00	10.00	HARD	0.	NO	0.	0.
100	1000.	135.00	8.00	HARD	0.	NO	0.	0.
101	2000.	135.00	5.00	HARD	0.	NO	0.	0.
102	4000.	135.00	2.00	HARD	0.	NO	0.	0.
103	6000.	135.00	2.00	HARD	0.	NO	0.	0.
104	8000.	135.00	2.00	HARD	0.	NO	0.	0.
105	12000.	135.00	2.00	HARD	0.	NO	0.	0.
106	500.	112.50	12.00	HARD	0.	NO	0.	0.
107	1000.	112.50	8.00	HARD	0.	NO	0.	0.
108	2000.	112.50	2.00	HARD	0.	NO	0.	0.
109	4000.	112.50	2.00	HARD	0.	NO	0.	0.
110	6000.	112.50	2.00	HARD	0.	NO	0.	0.
111	8000.	112.50	2.00	HARD	0.	NO	0.	0.
112	12000.	112.50	2.00	HARD	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #204-CYCLONE
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-CYCLONE	155.6	157.9	105.0	135.0	121.0	139.0	157.0	146.0	145.0	143.0	144.0

XO= .00 YO= .00 ZO= 12.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #204-CYCLONE
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

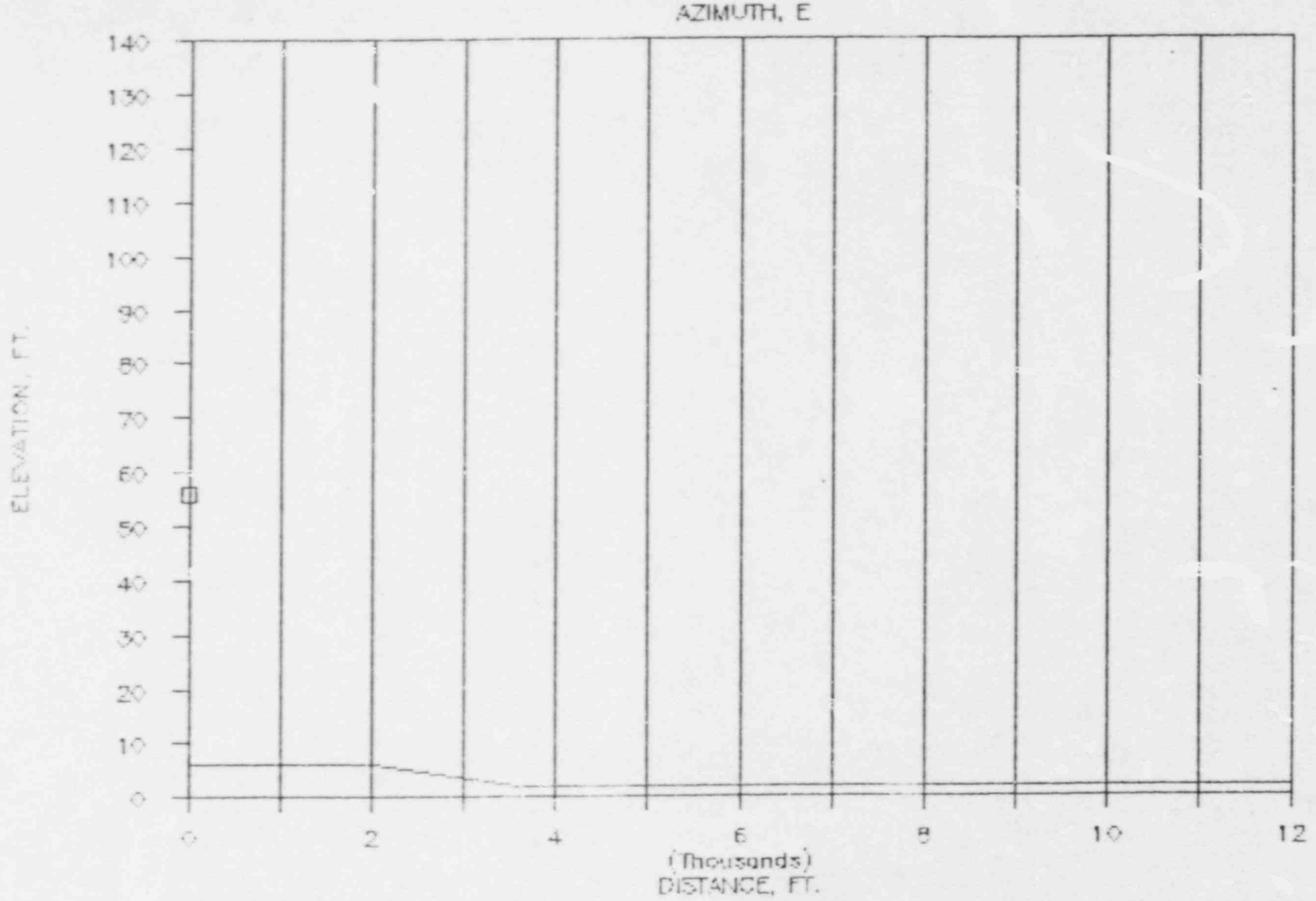
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #204-CYCLONE

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

DISTANCE IN FEET

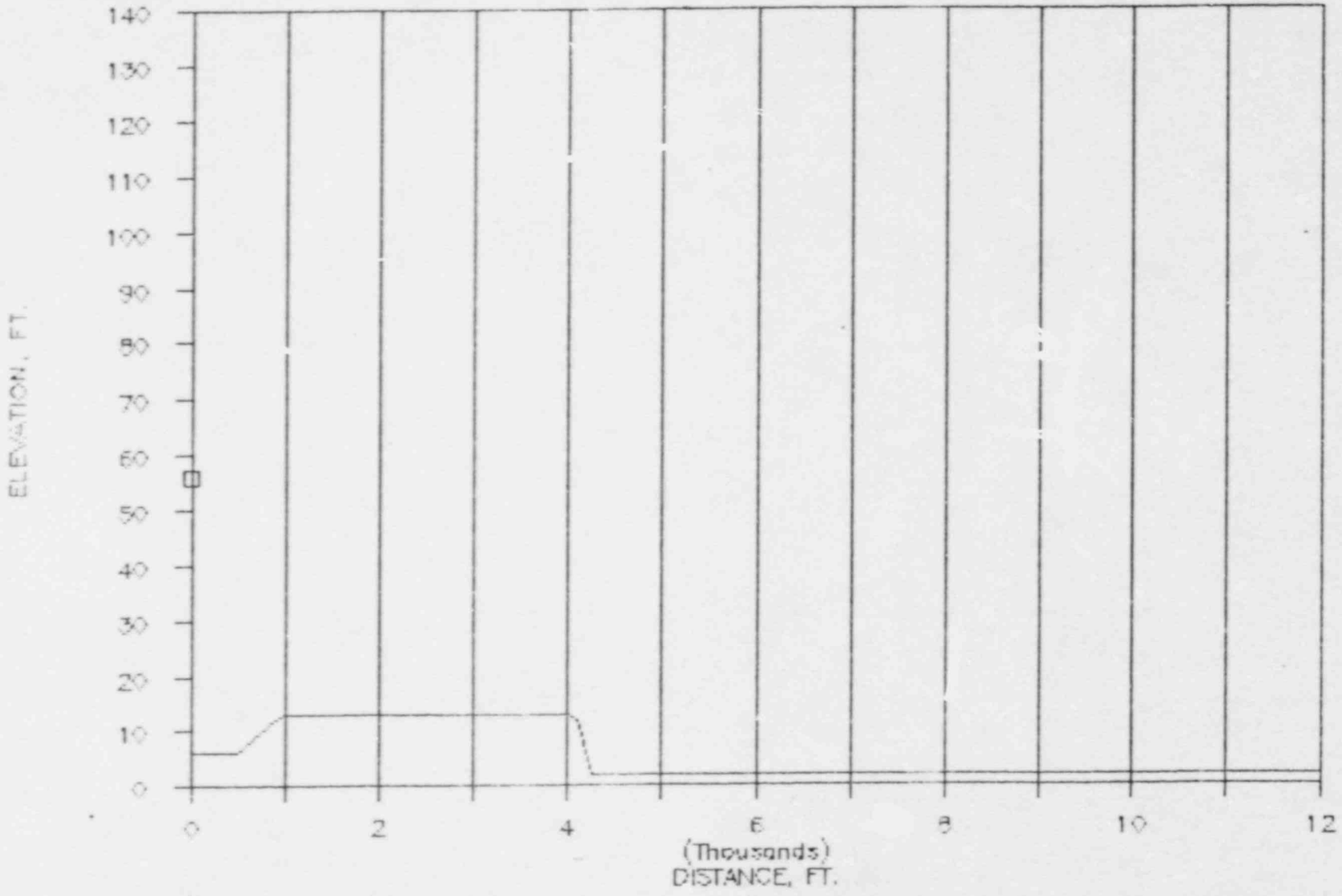
AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	106.	99.	92.	84.	79.	75.	68.
ENE	106.	99.	92.	84.	79.	75.	68.
NE	106.	99.	92.	84.	79.	75.	68.
NNE	105.	95.	81.	65.	56.	51.	44.
N	105.	94.	79.	63.	55.	50.	42.
NNW	105.	94.	78.	62.	55.	50.	42.
NW	105.	94.	78.	62.	55.	50.	41.
WNW	105.	94.	79.	62.	55.	50.	42.
W	105.	95.	80.	63.	56.	51.	43.
WSW	105.	95.	82.	66.	57.	52.	45.
SW	105.	95.	87.	80.	76.	66.	66.
SSW	105.	95.	87.	80.	76.	72.	66.
S	106.	99.	92.	84.	79.	75.	68.
SSE	106.	99.	92.	84.	79.	75.	68.
SE	106.	99.	92.	84.	79.	75.	68.
ESE	106.	99.	92.	84.	79.	75.	68.

ARTIFICIAL ISLAND 215



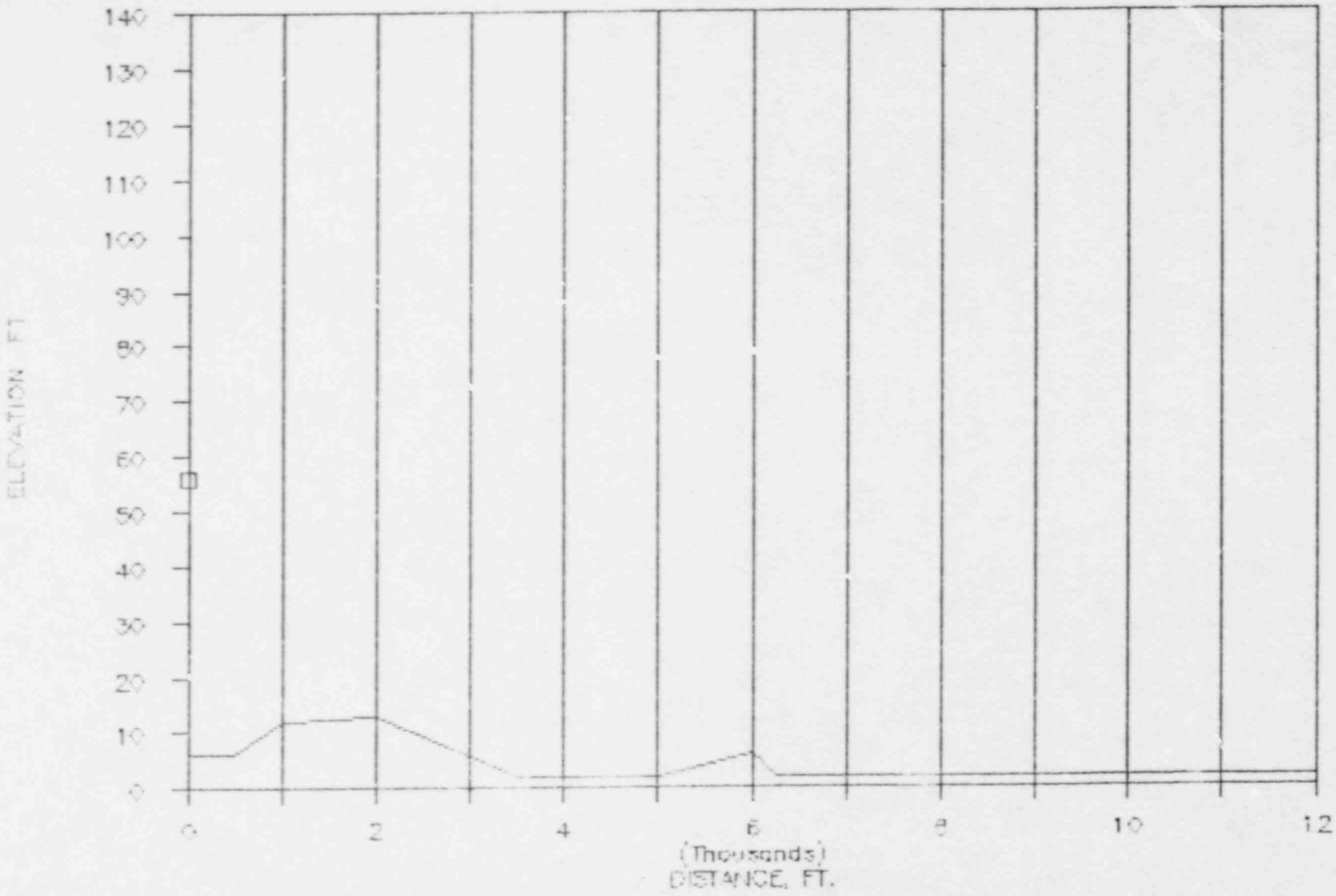
ARTIFICIAL ISLAND 215

AZIMUTH, ENE



ARTIFICIAL ISLAND 215

AZIMUTH, NE



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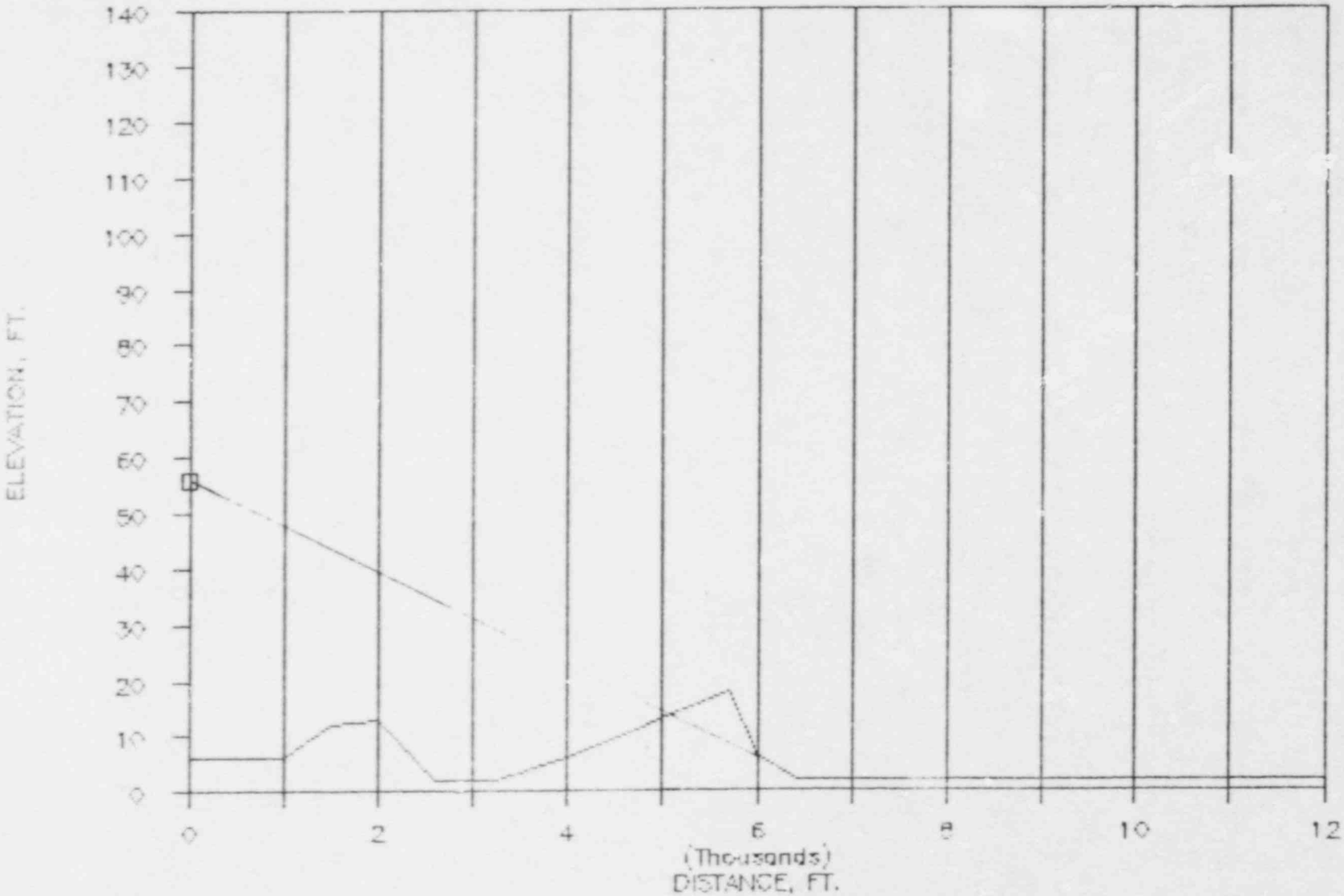

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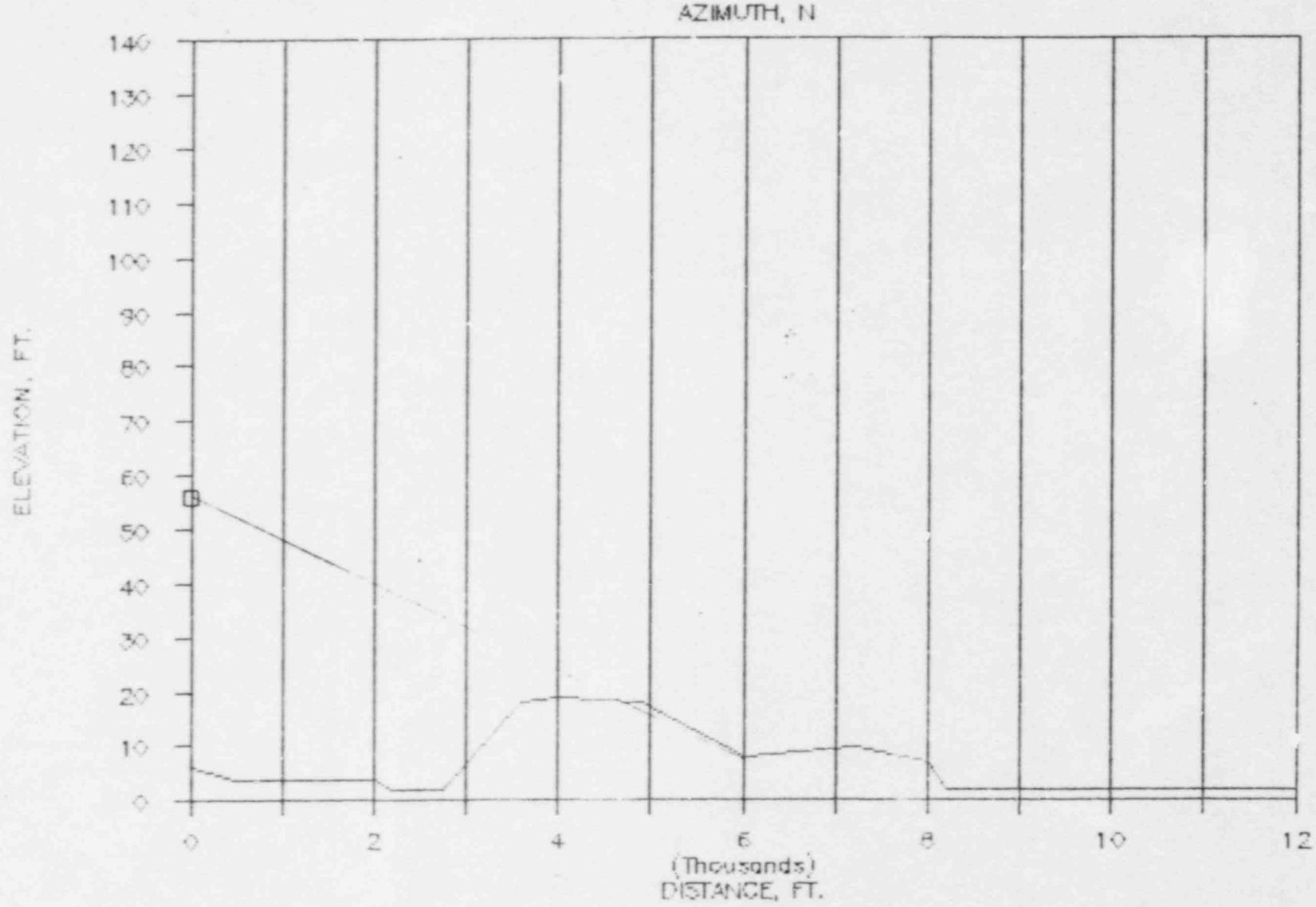

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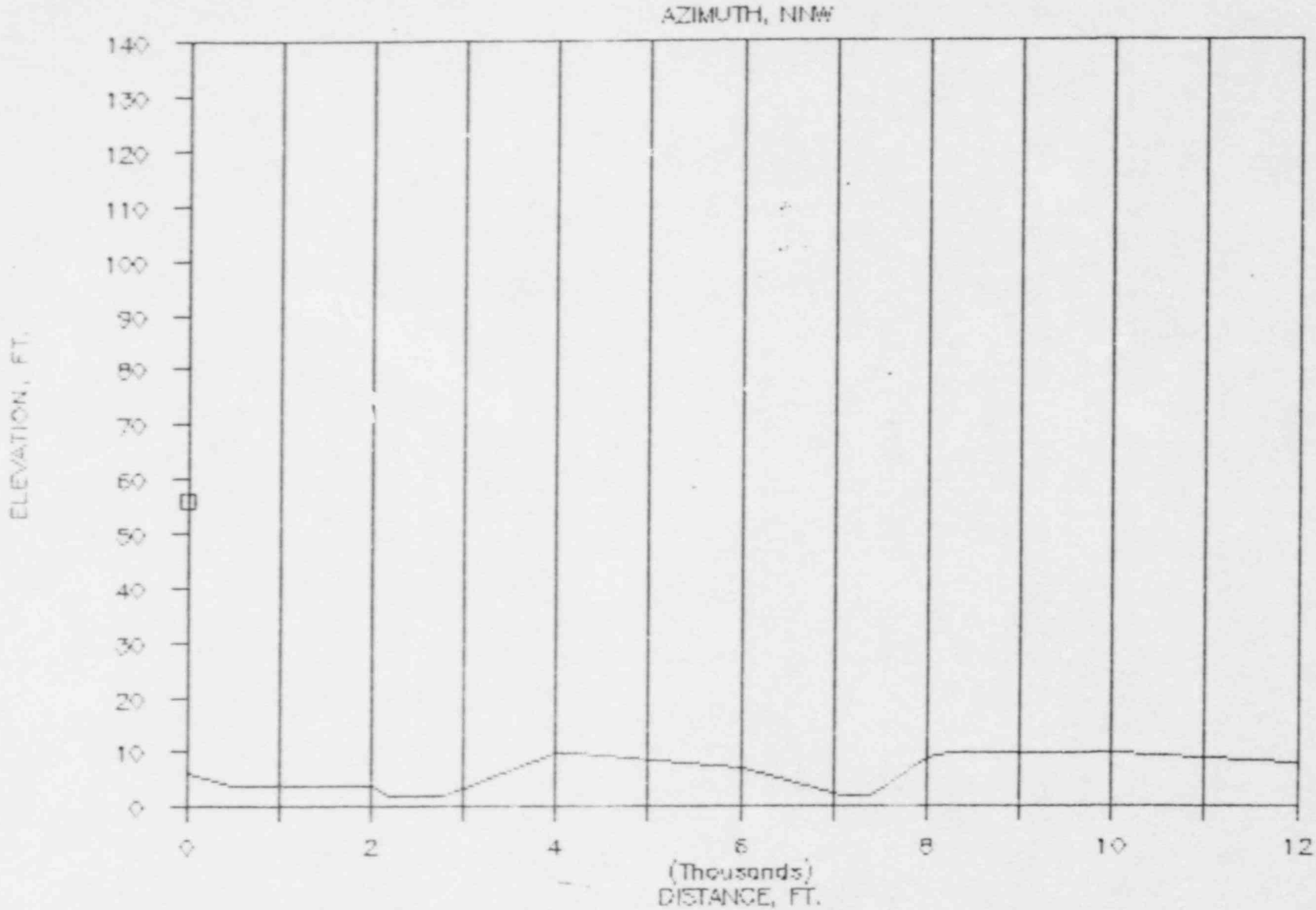

ARTIFICIAL ISLAND 215

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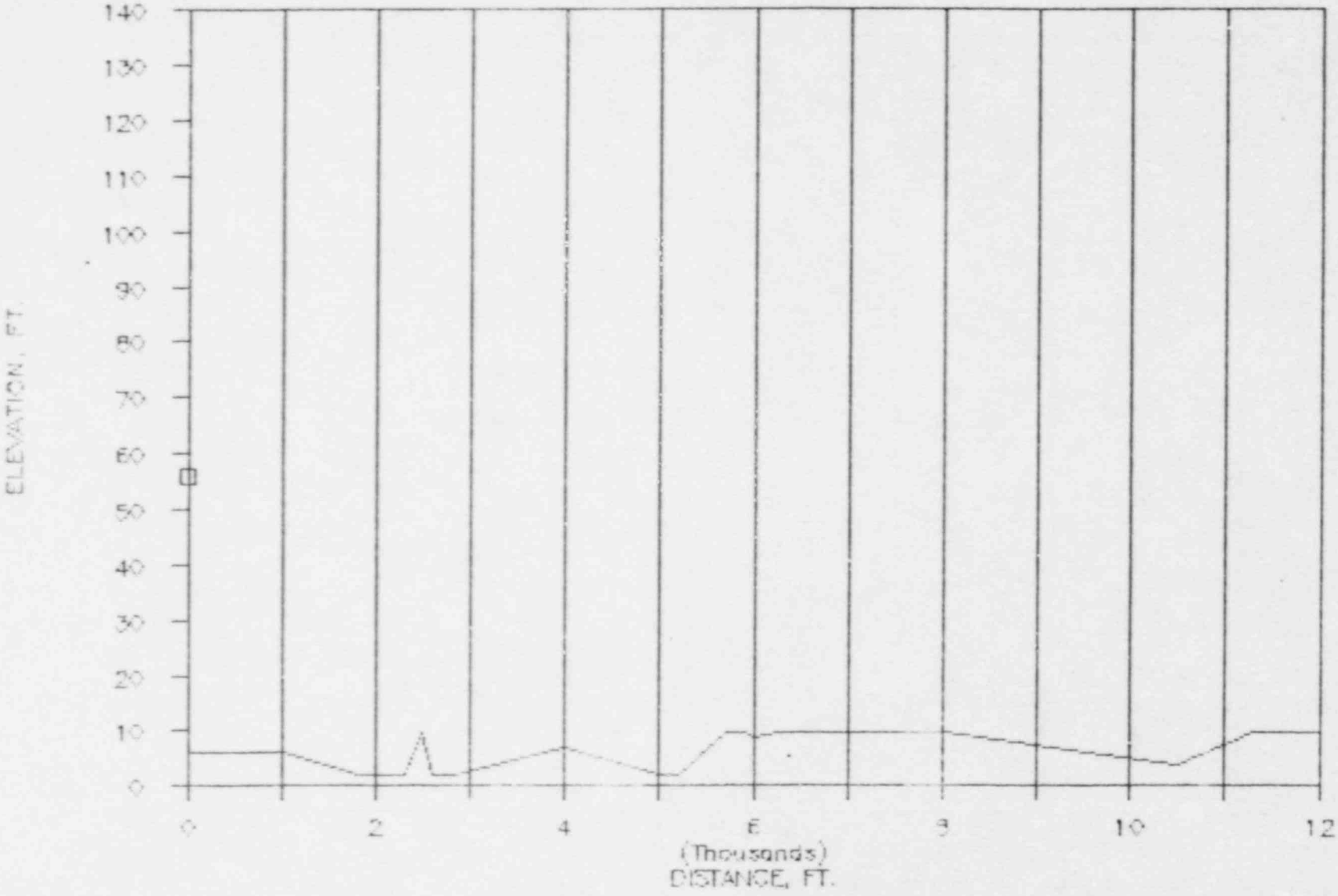

ARTIFICIAL ISLAND 215

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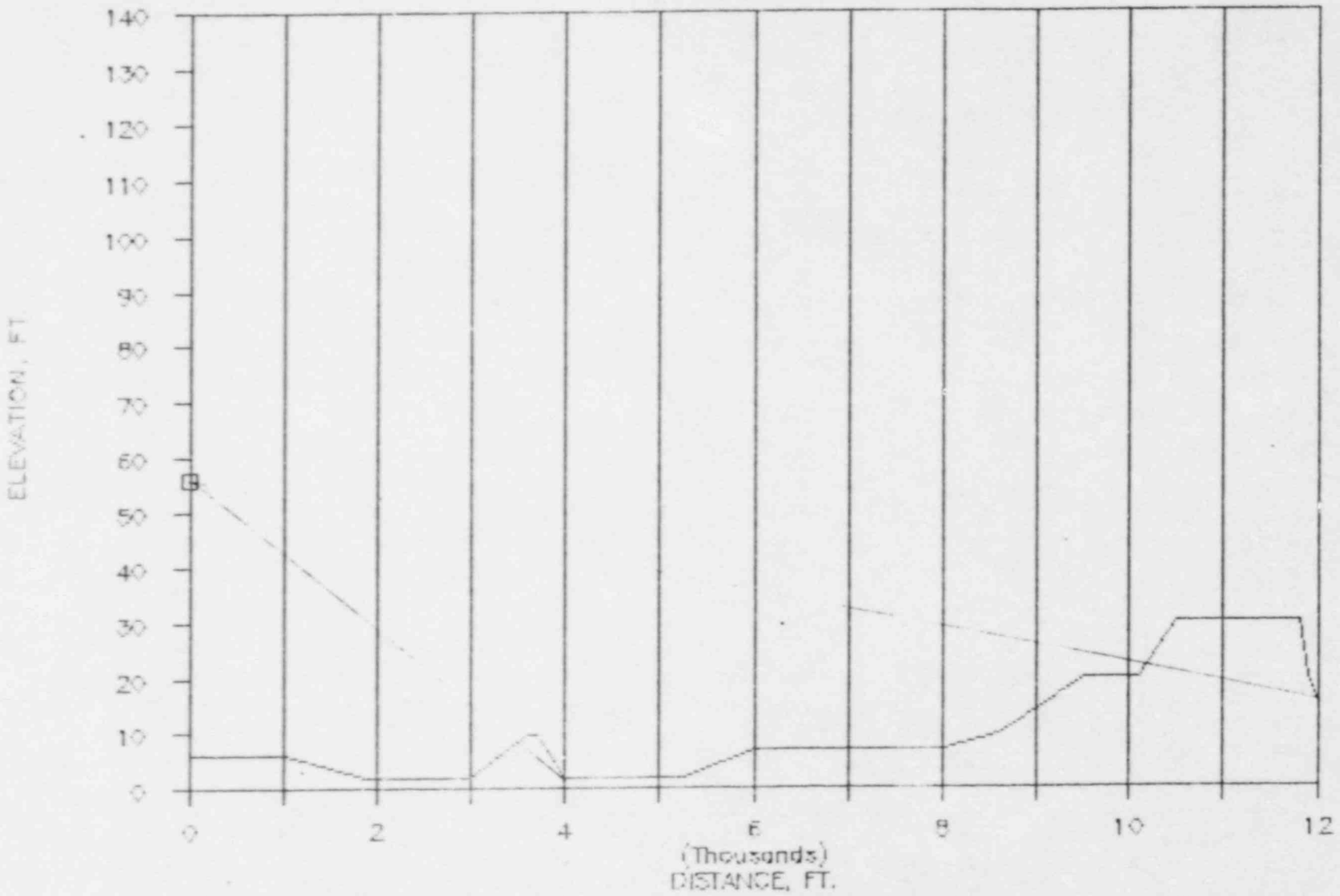

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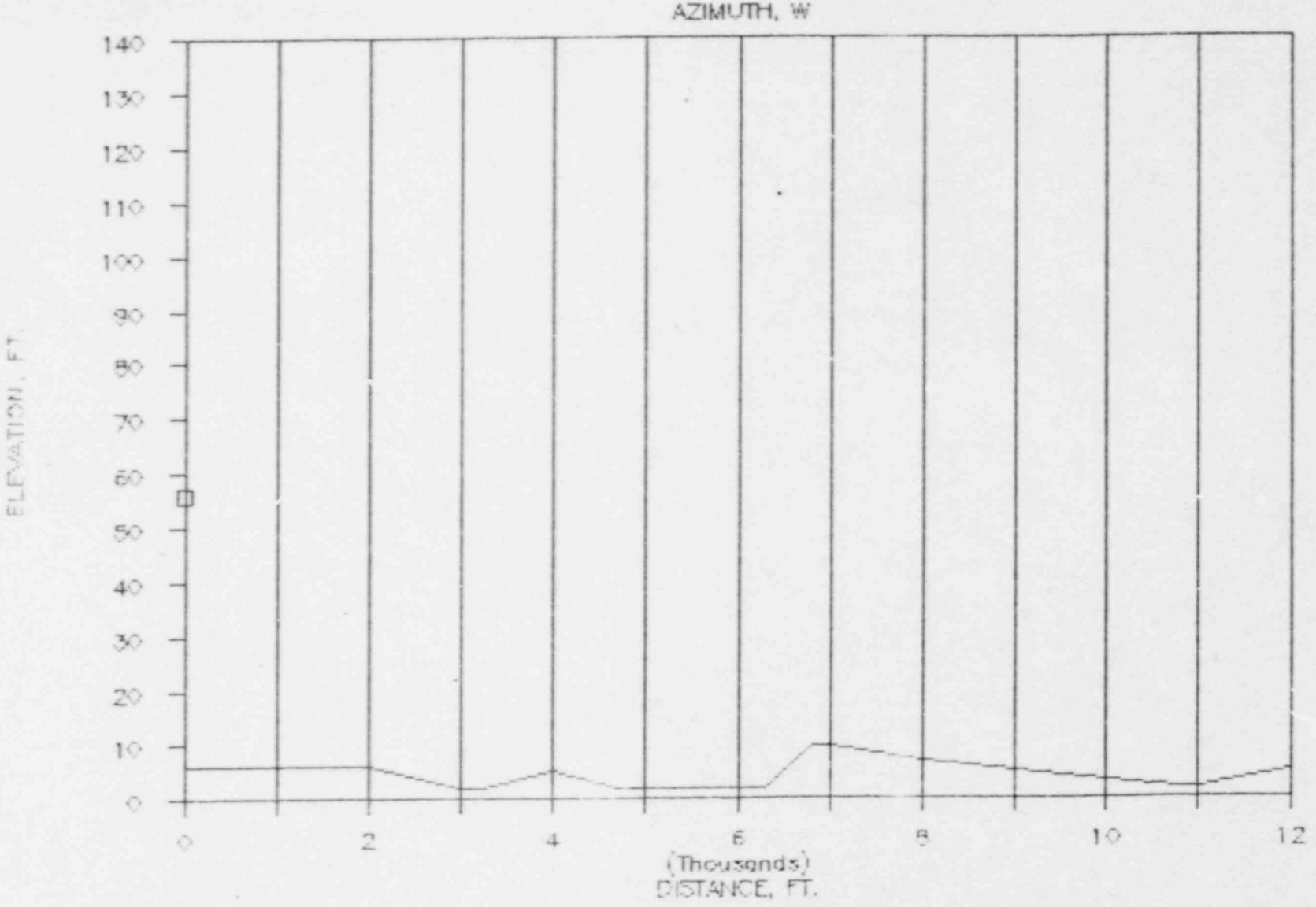

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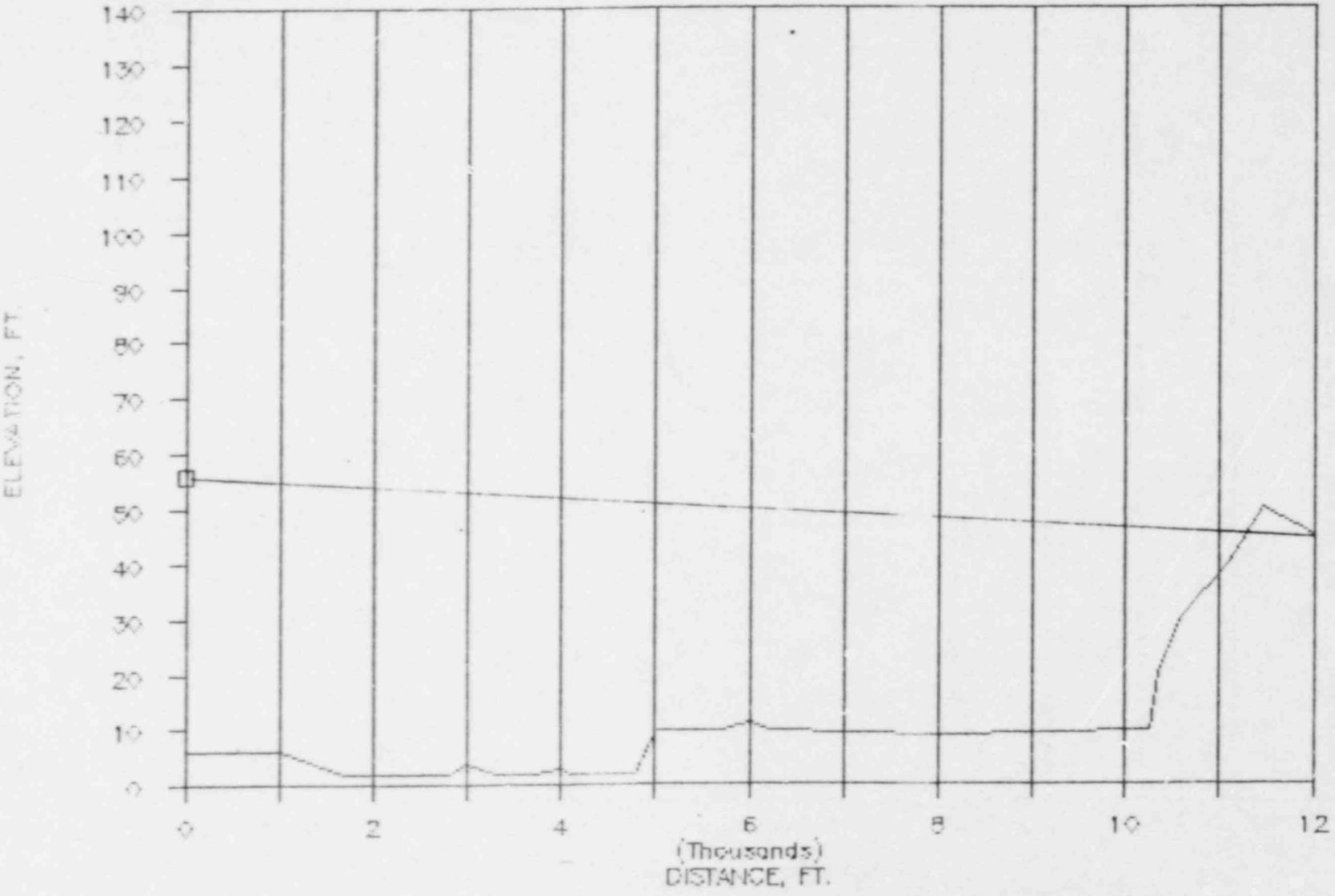
AZIMUTH, WSW



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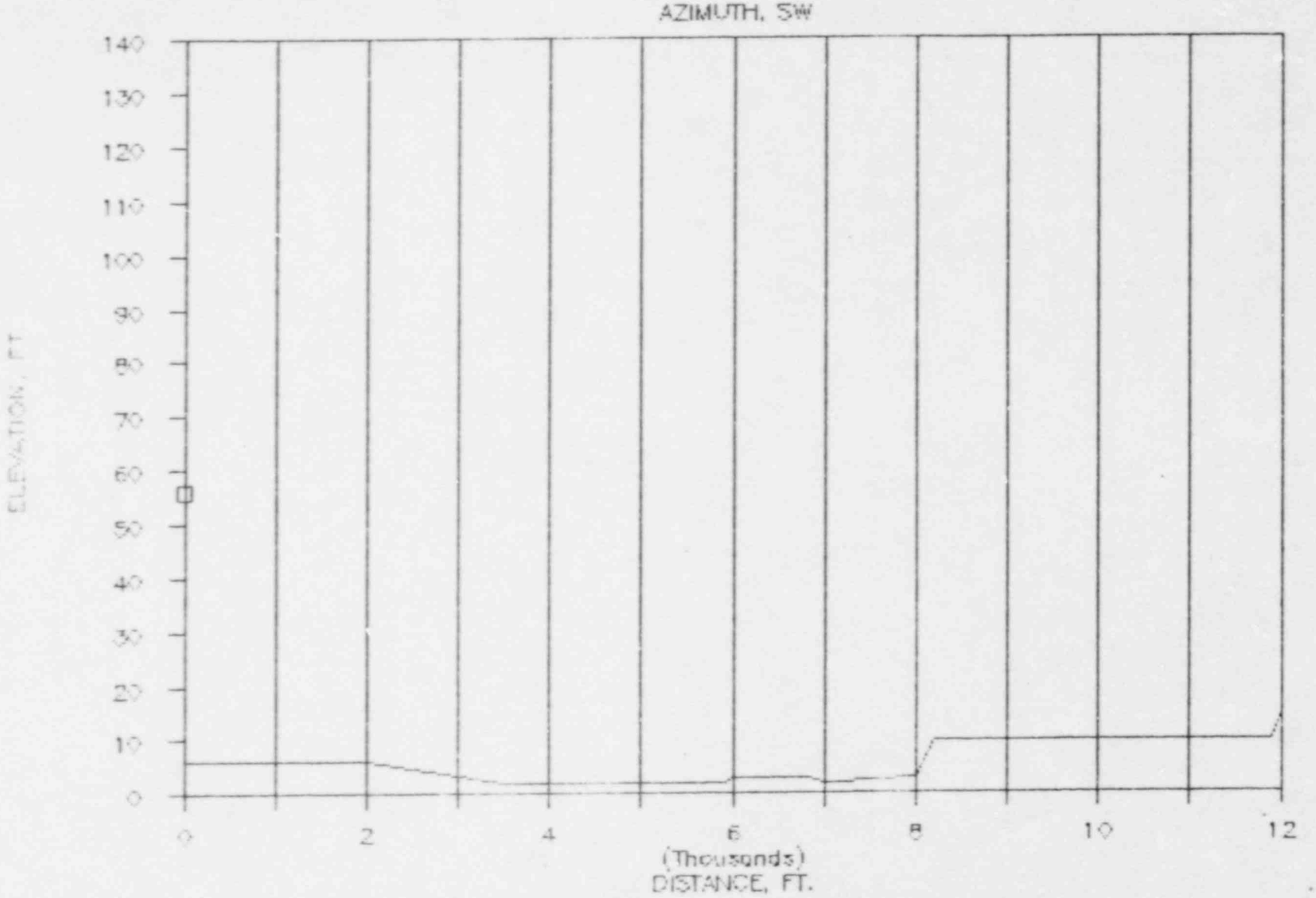
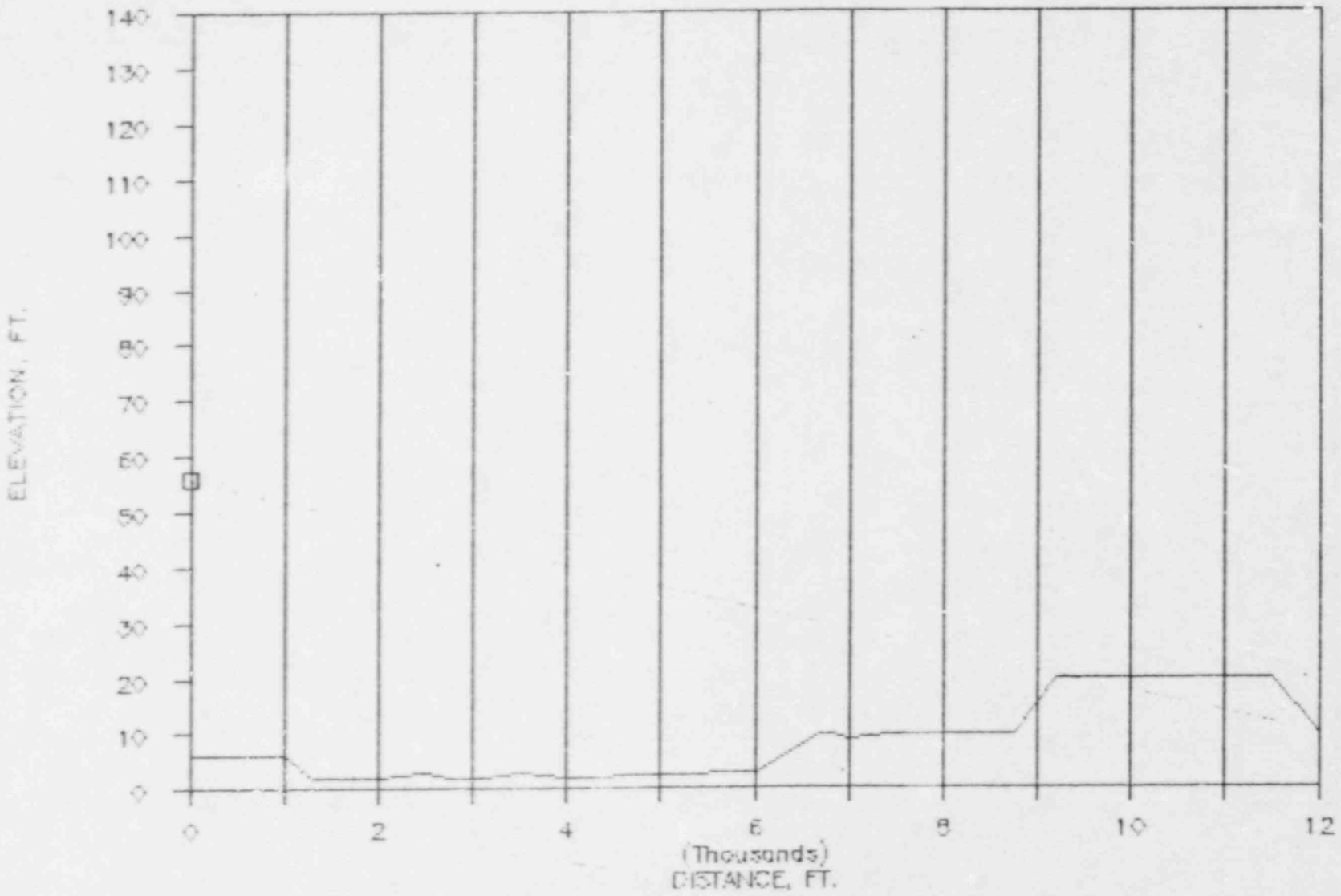


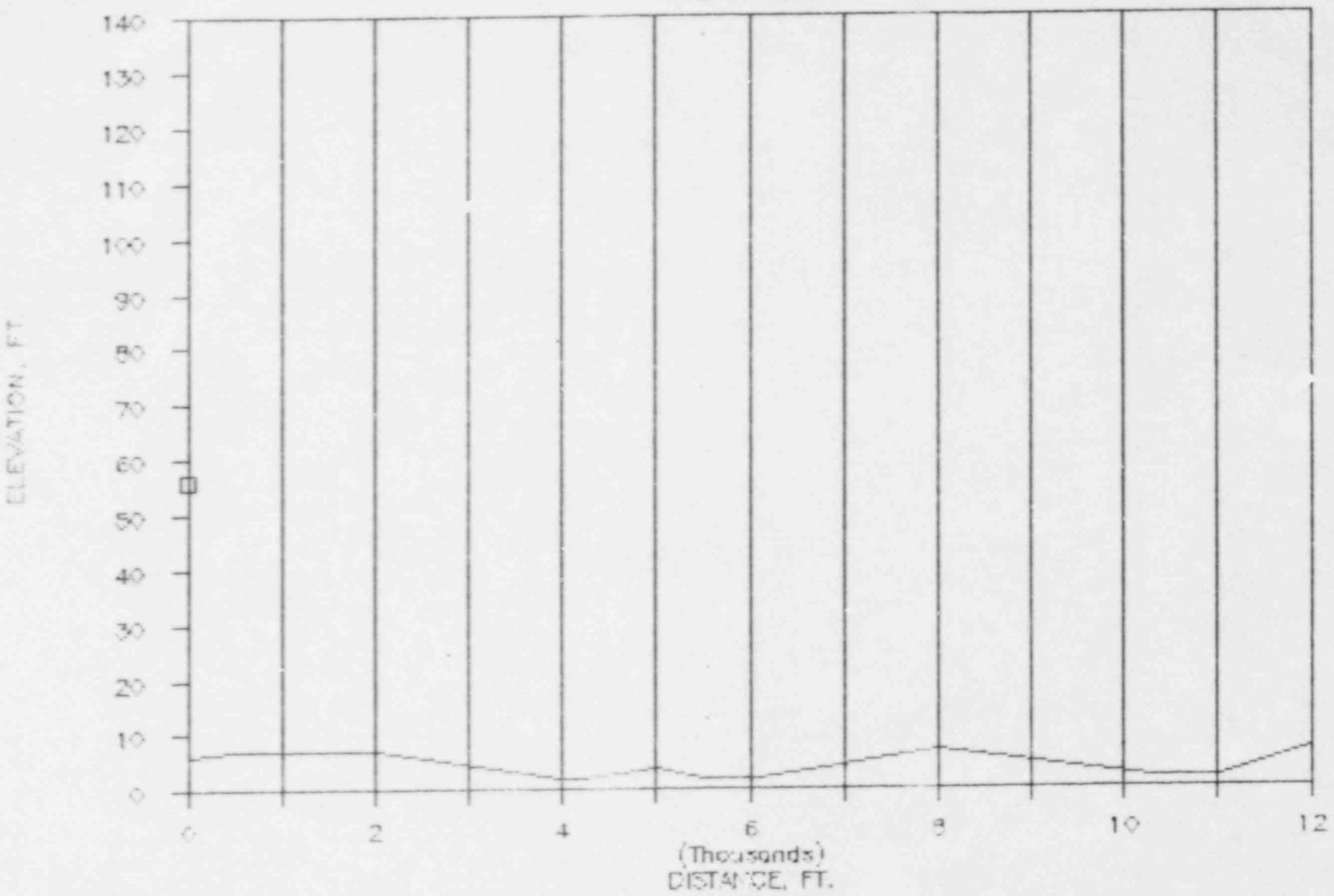
ARTIFICIAL ISLAND 215

AZIMUTH, SSW



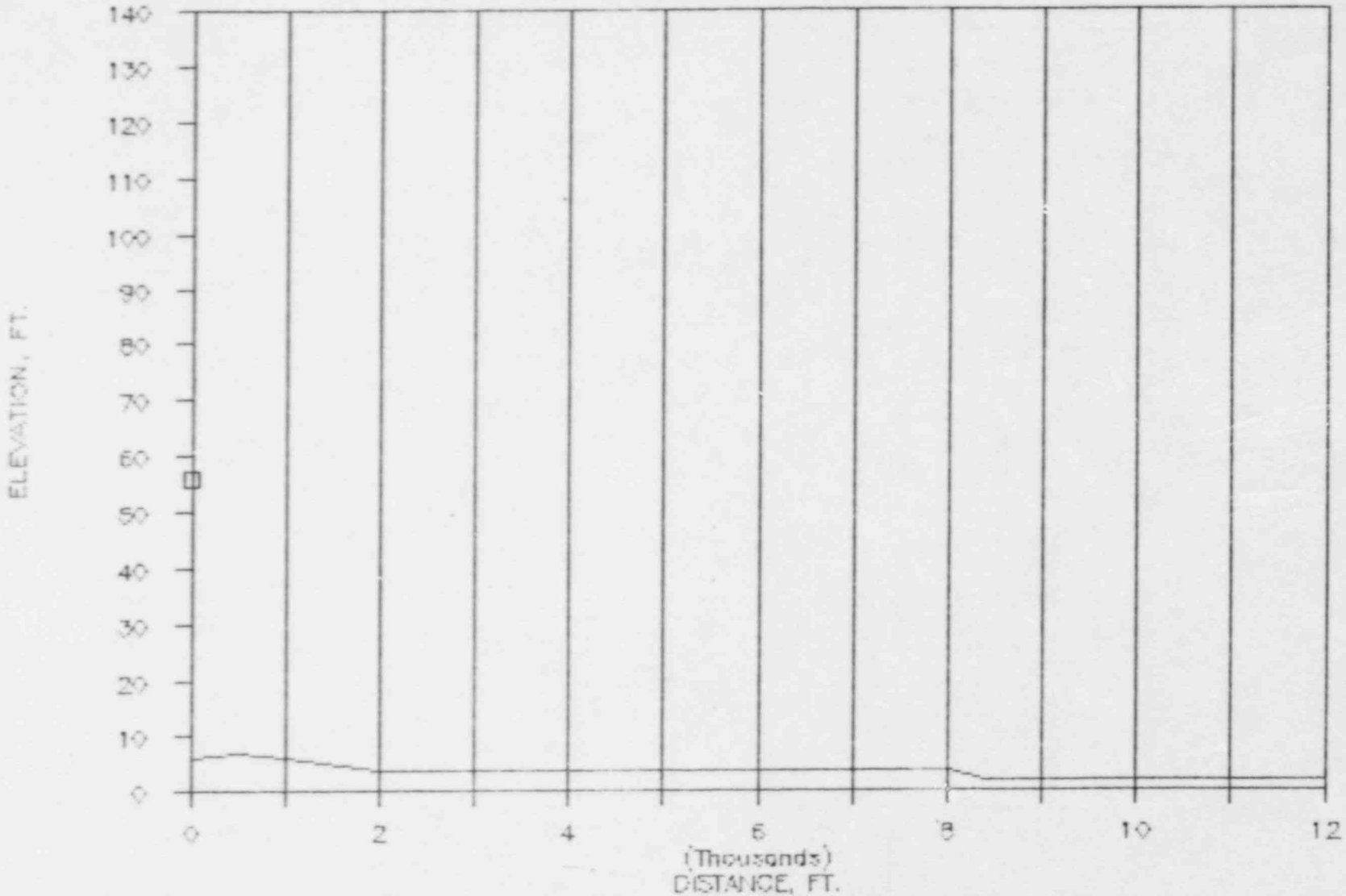
ARTIFICIAL ISLAND 215

AZIMUTH, S



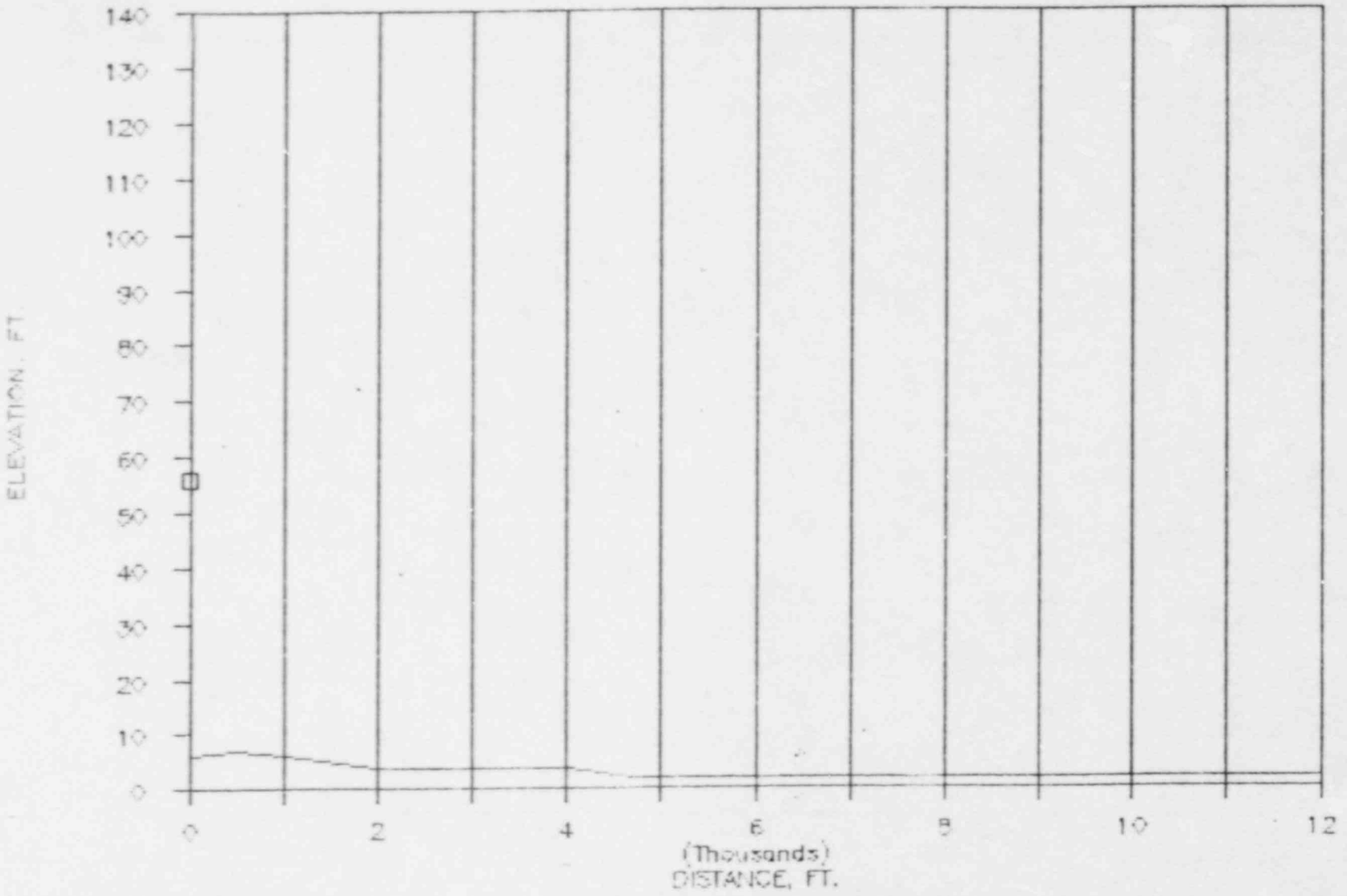
ARTIFICIAL ISLAND 215

AZIMUTH, SSE



ARTIFICIAL ISLAND 215

AZIMUTH, SE



ARTIFICIAL ISLAND 215

AZIMUTH, ESE

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #215-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	6.00	HARD	0.	NO	0.	0.
2	1000.	90.00	6.00	HARD	0.	NO	0.	0.
3	2000.	90.00	6.00	HARD	0.	NO	0.	0.
4	4000.	90.00	2.00	HARD	0.	NO	0.	0.
5	6000.	90.00	2.00	HARD	0.	NO	0.	0.
6	8000.	90.00	2.00	HARD	0.	NO	0.	0.
7	12000.	90.00	2.00	HARD	0.	NO	0.	0.
8	500.	67.50	6.00	HARD	0.	NO	0.	0.
9	1000.	67.50	13.00	HARD	0.	NO	0.	0.
10	2000.	67.50	13.00	HARD	0.	NO	0.	0.
11	4000.	67.50	13.00	HARD	0.	NO	0.	0.
12	6000.	67.50	2.00	HARD	0.	NO	0.	0.
13	8000.	67.50	2.00	HARD	0.	NO	0.	0.
14	12000.	67.50	2.00	HARD	0.	NO	0.	0.
15	500.	45.00	6.00	HARD	0.	NO	0.	0.
16	1000.	45.00	12.00	HARD	0.	NO	0.	0.
17	2000.	45.00	13.00	HARD	0.	NO	0.	0.
18	4000.	45.00	2.00	HARD	0.	NO	0.	0.
19	6000.	45.00	6.00	HARD	0.	NO	0.	0.
20	8000.	45.00	2.00	HARD	0.	NO	0.	0.
21	12000.	45.00	2.00	HARD	0.	NO	0.	0.
22	500.	22.50	6.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	6.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	13.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	6.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	6.00	SOFT	0.	YES	5700.	18.
27	8000.	22.50	2.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	2.00	SOFT	0.	NO	0.	0.
29	500.	.00	4.00	SOFT	0.	NO	0.	0.
30	1000.	.00	4.00	SOFT	0.	NO	0.	0.
31	2000.	.00	4.00	SOFT	0.	NO	0.	0.
32	4000.	.00	19.00	SOFT	0.	NO	0.	0.
33	6000.	.00	8.00	SOFT	0.	YES	4000.	19.
34	8000.	.00	7.00	SOFT	0.	NO	0.	0.
35	12000.	.00	2.00	SOFT	0.	NO	0.	0.
36	500.	337.50	4.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	4.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	4.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	10.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	7.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	9.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	8.00	SOFT	0.	NO	0.	0.
43	500.	315.00	6.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	6.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	2.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	7.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	9.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	10.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	10.00	SOFT	0.	NO	0.	0.
50	500.	292.50	6.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	6.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	2.00	SOFT	0.	NO	0.	0.
53	4000.	292.50	2.00	SOFT	0.	YES	3700.	10.
54	6000.	292.50	7.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	7.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	15.00	SOFT	0.	YES	11800.	30.
57	500.	270.00	6.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	6.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	6.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	5.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	2.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	7.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	5.00	SOFT	0.	NO	0.	0.
64	500.	247.50	6.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	6.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	2.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	3.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	11.00	SOFT	0.	NO	0.	0.
69	8000.	247.50	9.00	SOFT	0.	NO	0.	0.
70	12000.	247.50	30.00	SOFT	0.	YES	11450.	50.
71	500.	225.00	6.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	6.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	6.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	2.00	SOFT	0.	NO	0.	0.
75	6000.	225.00	3.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	3.00	SOFT	0.	NO	0.	0.
77	12000.	225.00	15.00	SOFT	0.	NO	0.	0.
78	500.	202.50	6.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	6.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	2.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	2.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	3.00	SOFT	0.	NO	0.	0.
83	8000.	202.50	10.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	10.00	SOFT	0.	YES	11500.	20.
85	500.	180.00	7.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	7.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	7.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	2.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	2.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	7.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	7.00	SOFT	0.	NO	0.	0.
92	500.	157.50	7.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	6.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	4.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	4.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	4.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	4.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	2.00	SOFT	0.	NO	0.	0.
99	500.	135.00	7.00	HARD	0.	NO	0.	0.
100	1000.	135.00	6.00	HARD	0.	NO	0.	0.
101	2000.	135.00	4.00	HARD	0.	NO	0.	0.
102	4000.	135.00	4.00	HARD	0.	NO	0.	0.
103	6000.	135.00	2.00	HARD	0.	NO	0.	0.
104	8000.	135.00	2.00	HARD	0.	NO	0.	0.
105	12000.	135.00	2.00	HARD	0.	NO	0.	0.
106	500.	112.50	7.00	HARD	0.	NO	0.	0.
107	1000.	112.50	6.00	HARD	0.	NO	0.	0.
108	2000.	112.50	6.00	HARD	0.	NO	0.	0.
109	4000.	112.50	2.00	HARD	0.	NO	0.	0.
110	6000.	112.50	2.00	HARD	0.	NO	0.	0.
111	8000.	112.50	2.00	HARD	0.	NO	0.	0.
112	12000.	112.50	2.00	HARD	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #215-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XO= .00 YO= .00 ZO= 6.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #215-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.0

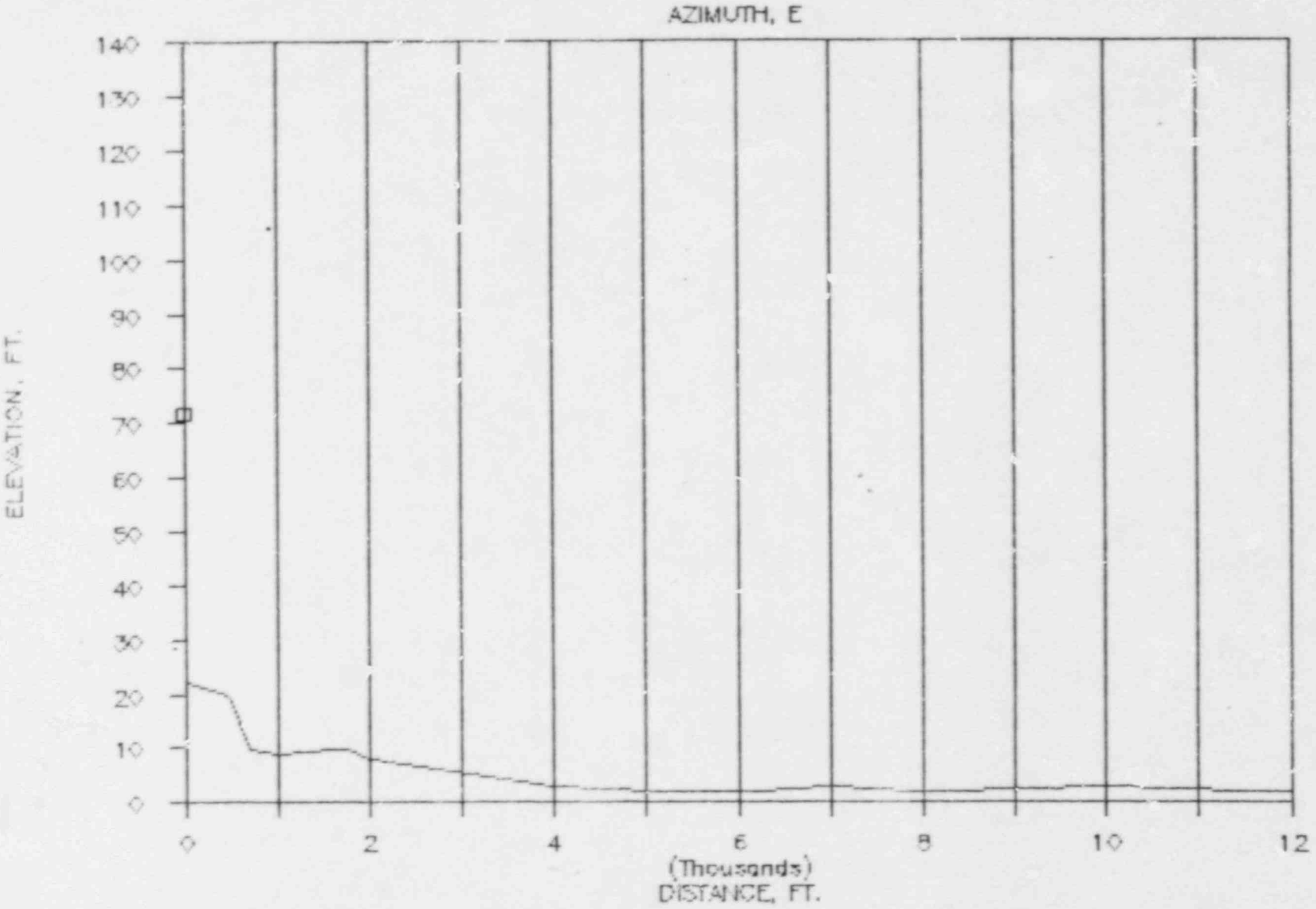
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #215-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

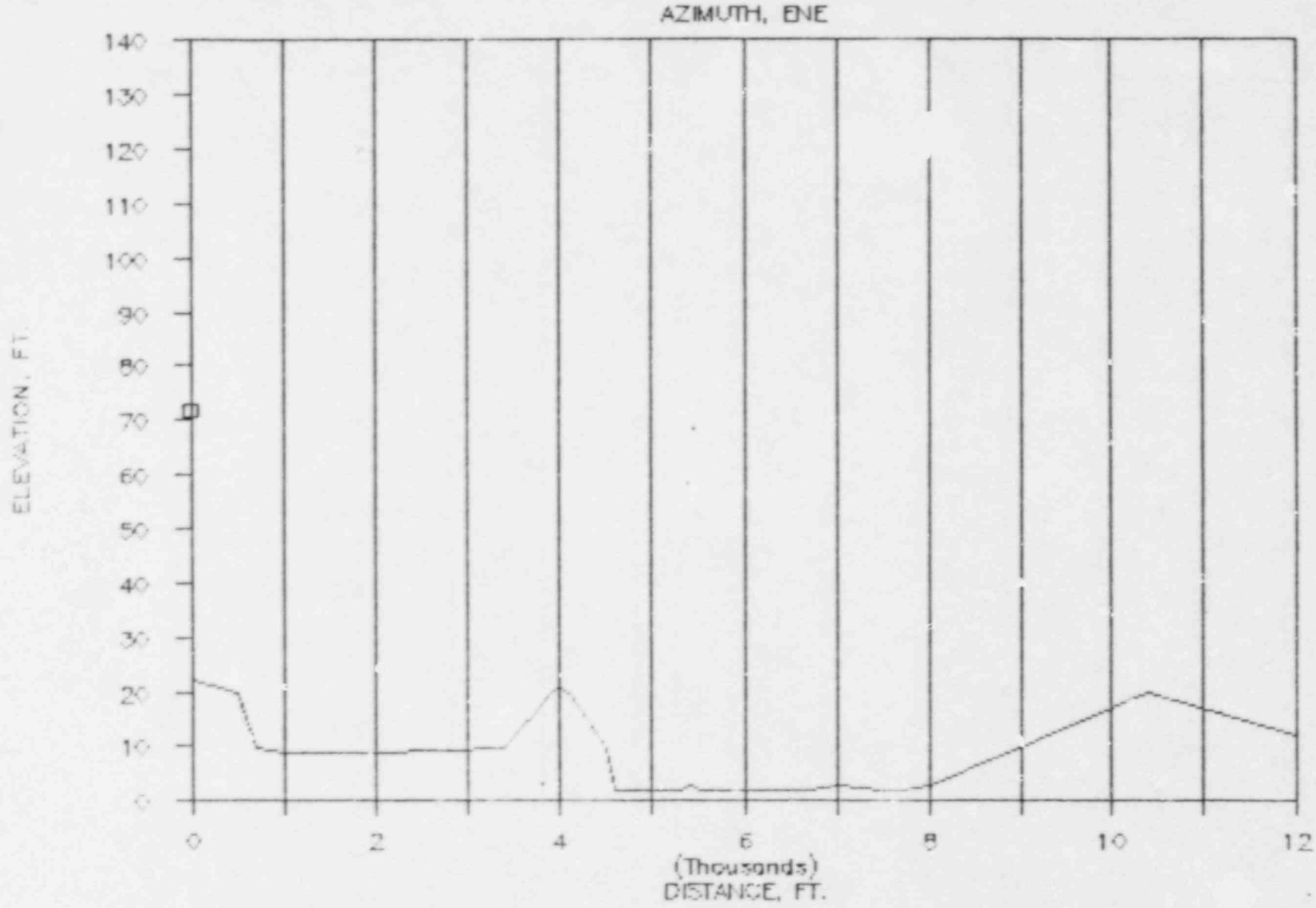
DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	108.	101.	93.	85.	80.	75.	68.
ENE	108.	101.	93.	85.	80.	75.	68.
NE	108.	101.	93.	85.	80.	75.	68.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	80.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	80.	76.	72.	66.
SSW	107.	97.	87.	80.	76.	72.	66.
S	107.	97.	87.	80.	76.	72.	66.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	108.	101.	93.	85.	80.	75.	68.
ESE	108.	101.	93.	85.	80.	75.	68.

ARTIFICIAL ISLAND 216



ARTIFICIAL ISLAND 216



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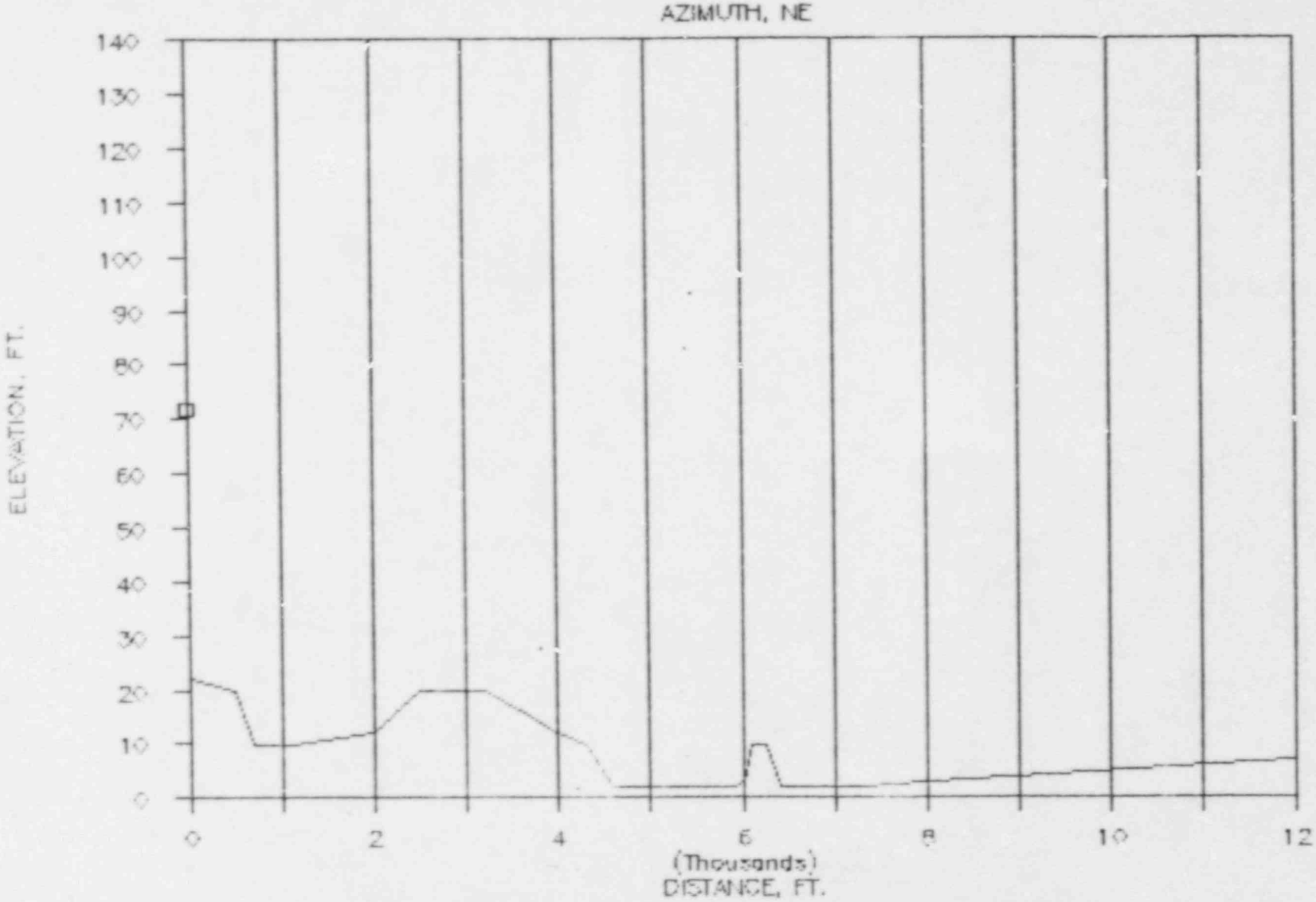

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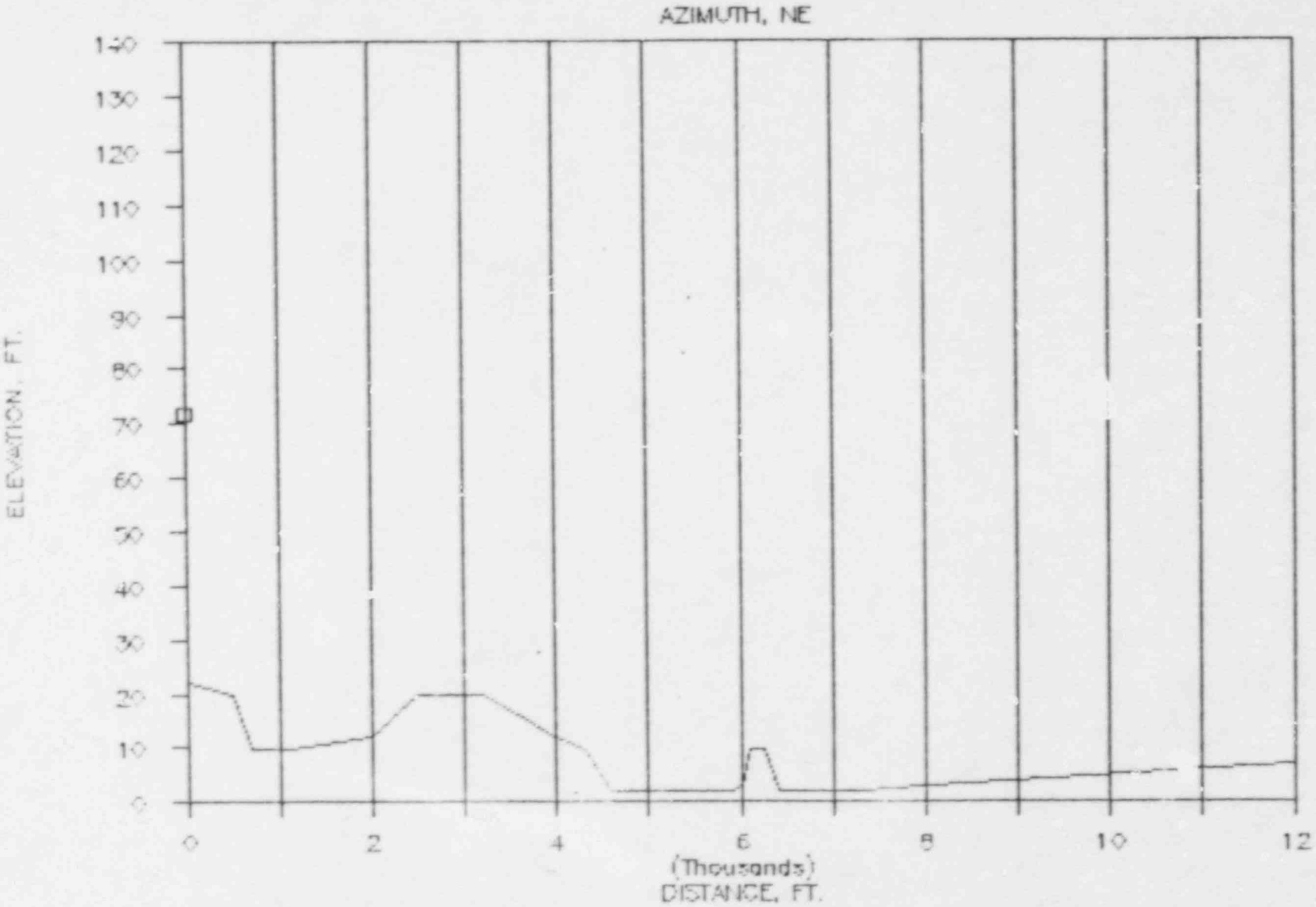

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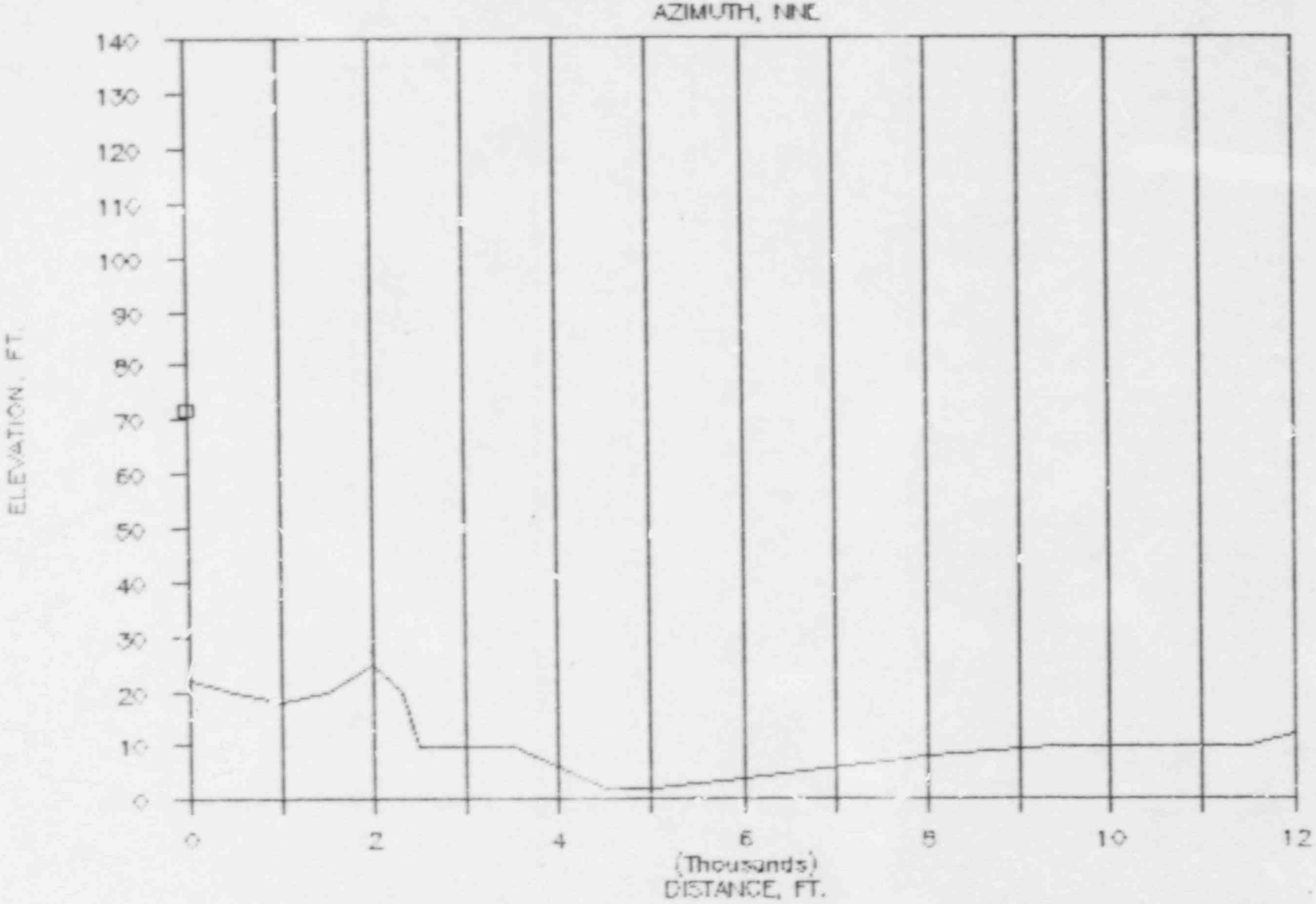

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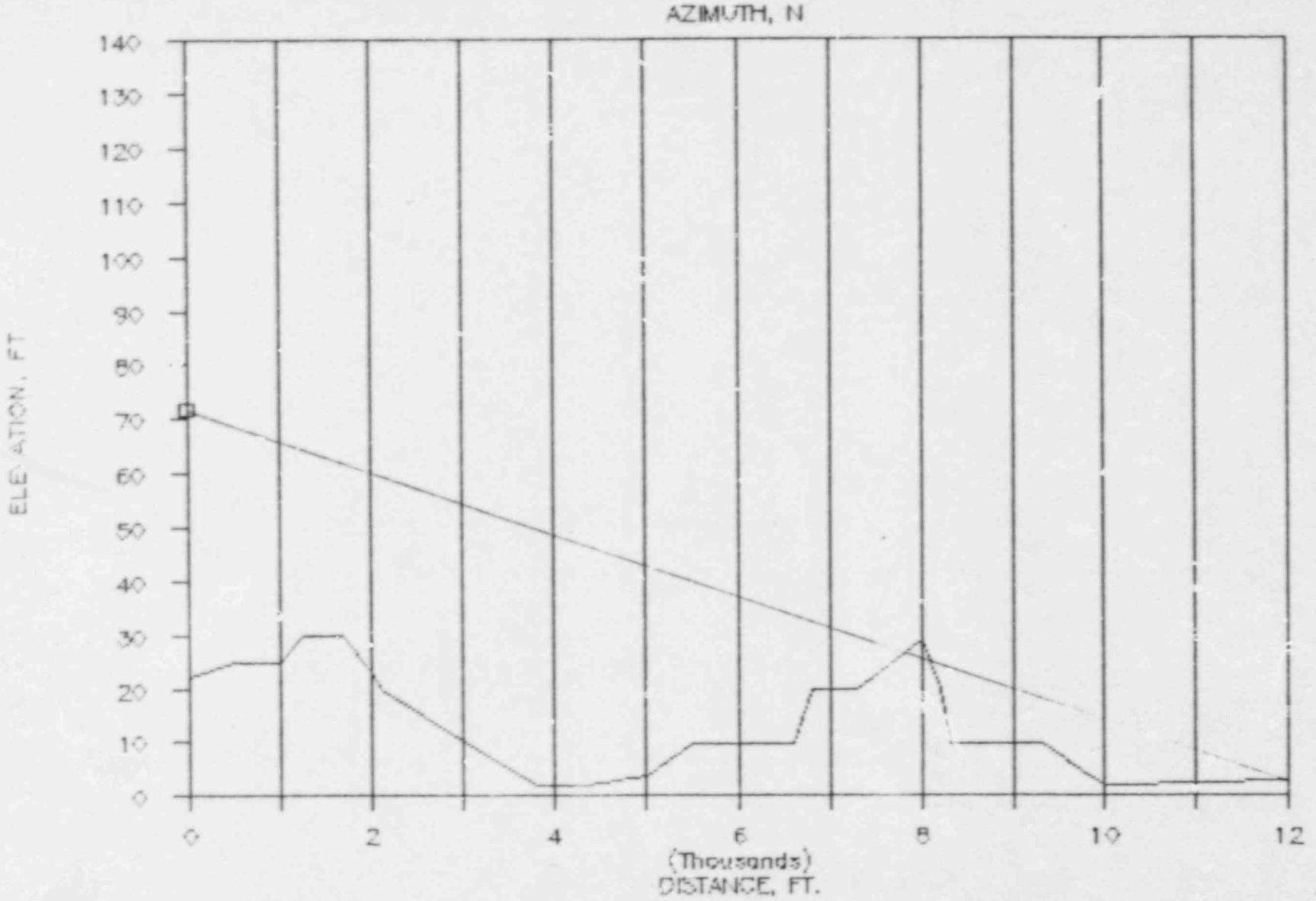
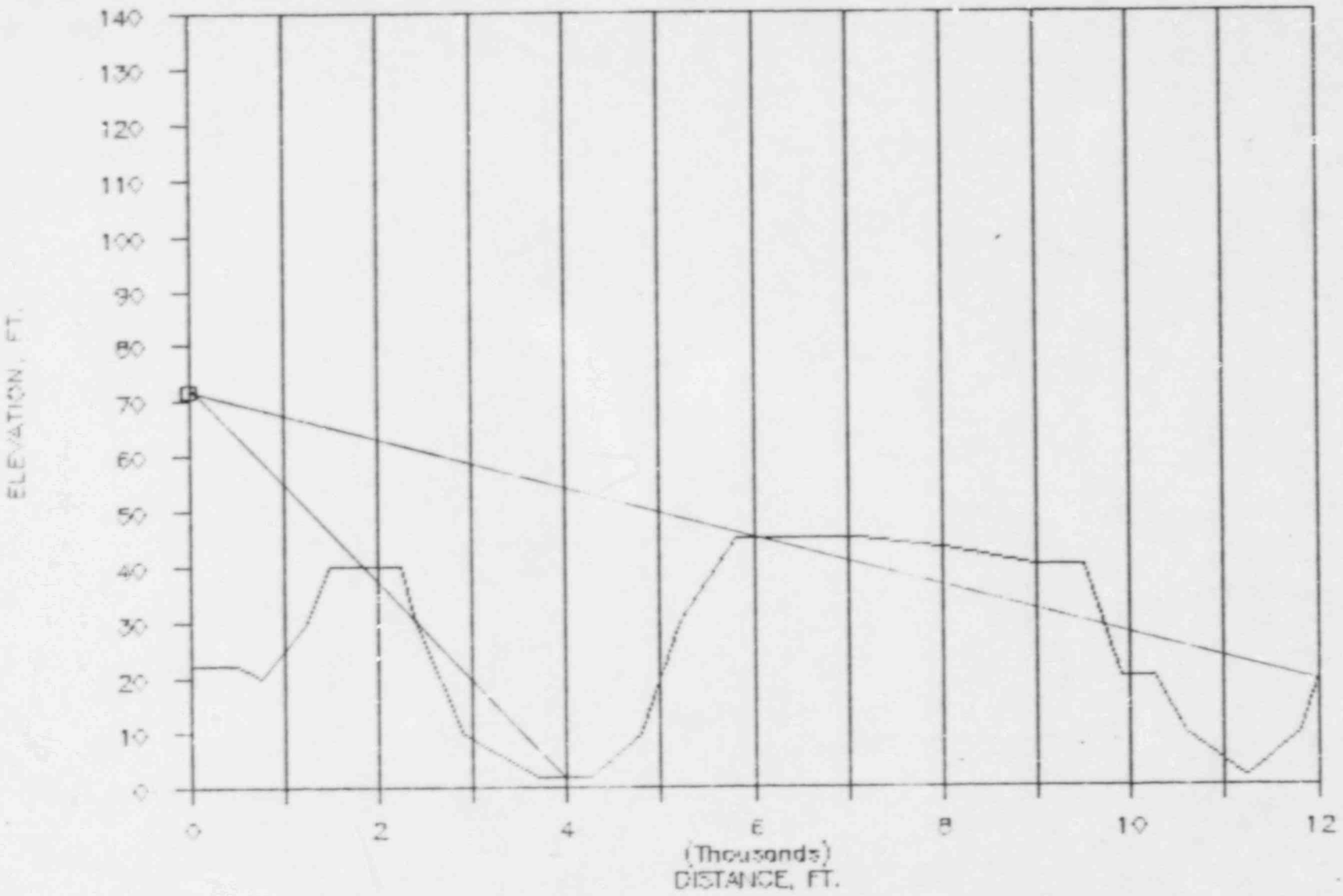


ARTIFICIAL ISLAND 216

AZIMUTH, NNW



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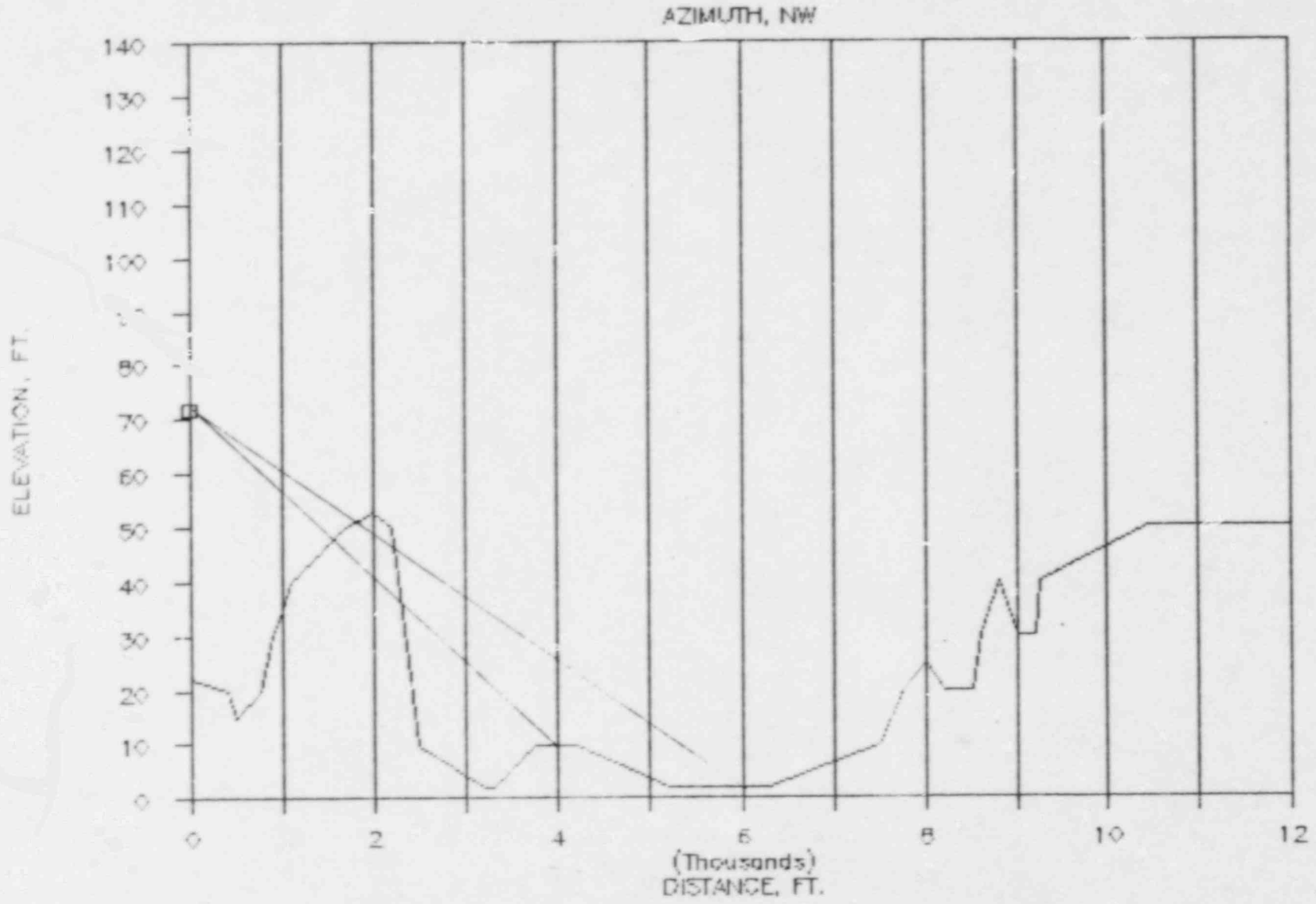
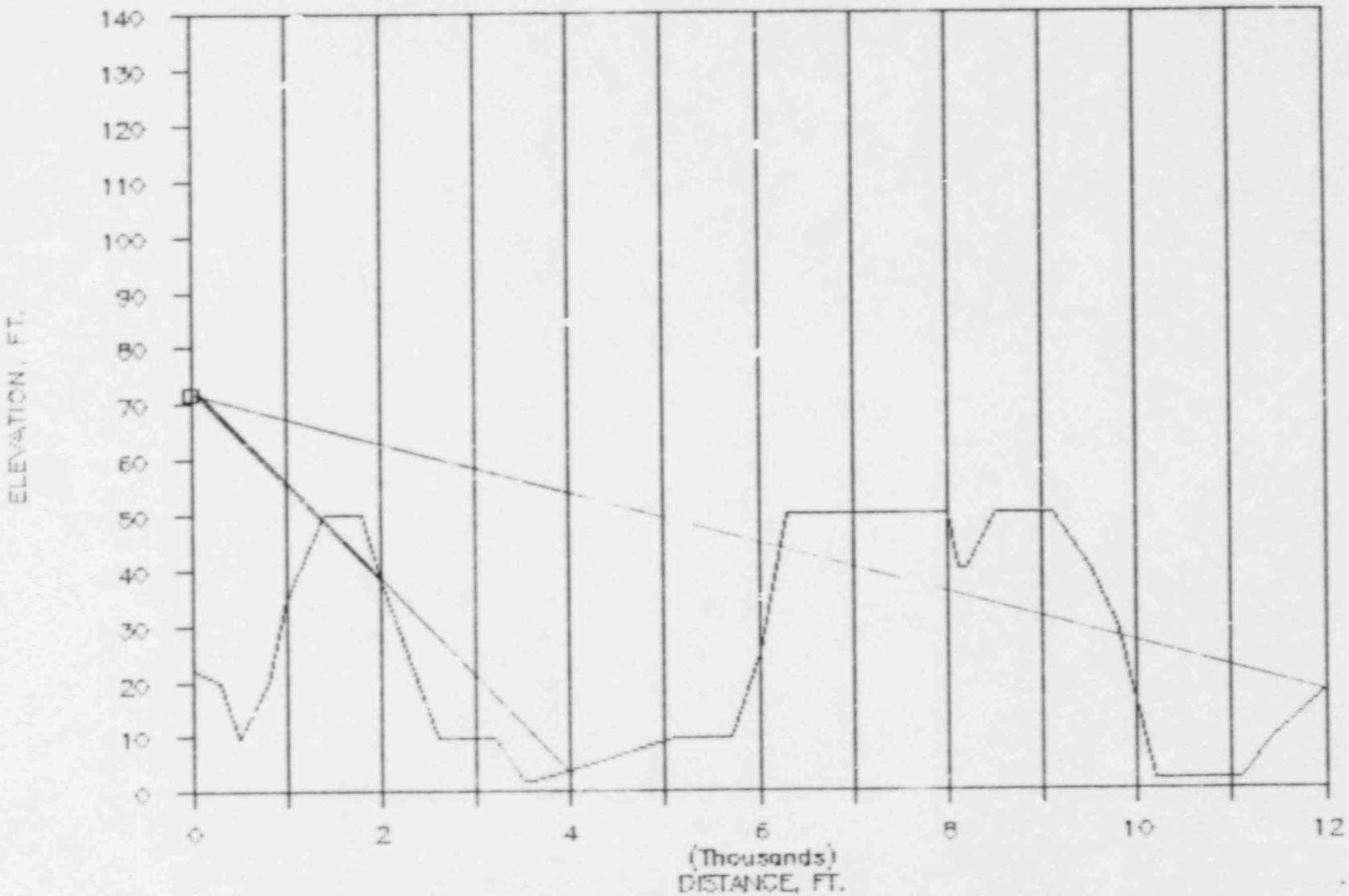


ARTIFICIAL ISLAND 216

AZIMUTH, WNW



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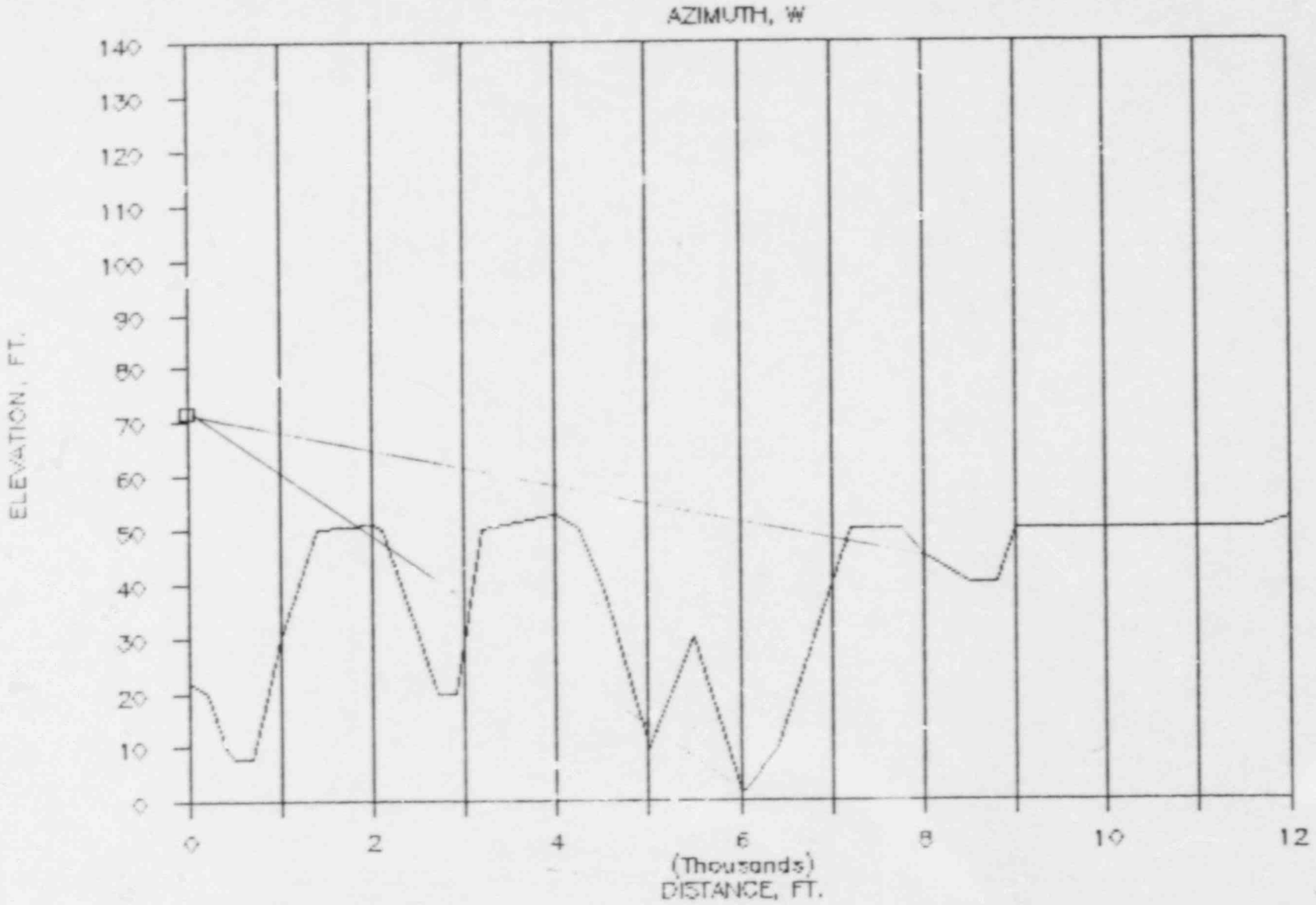
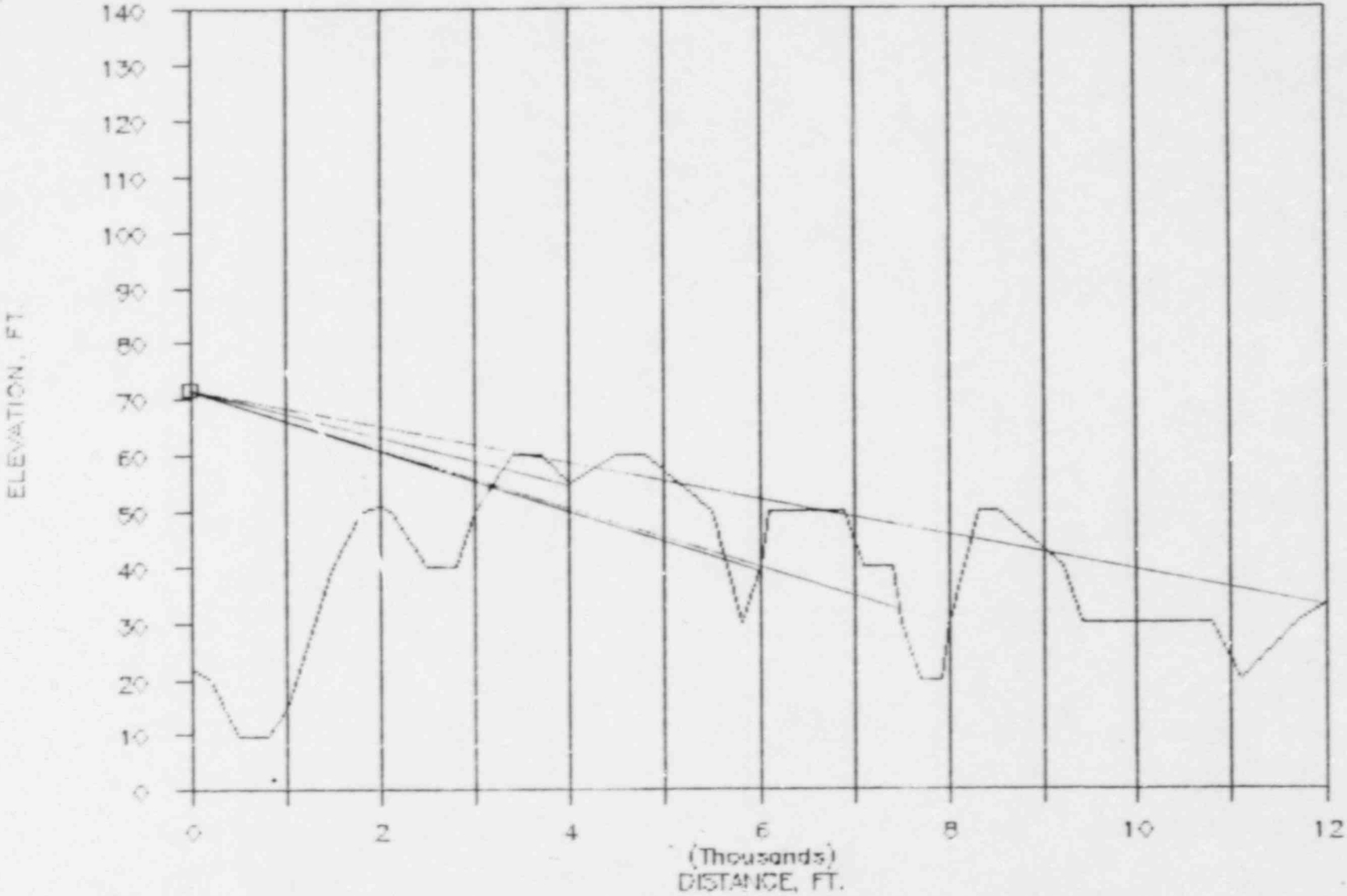


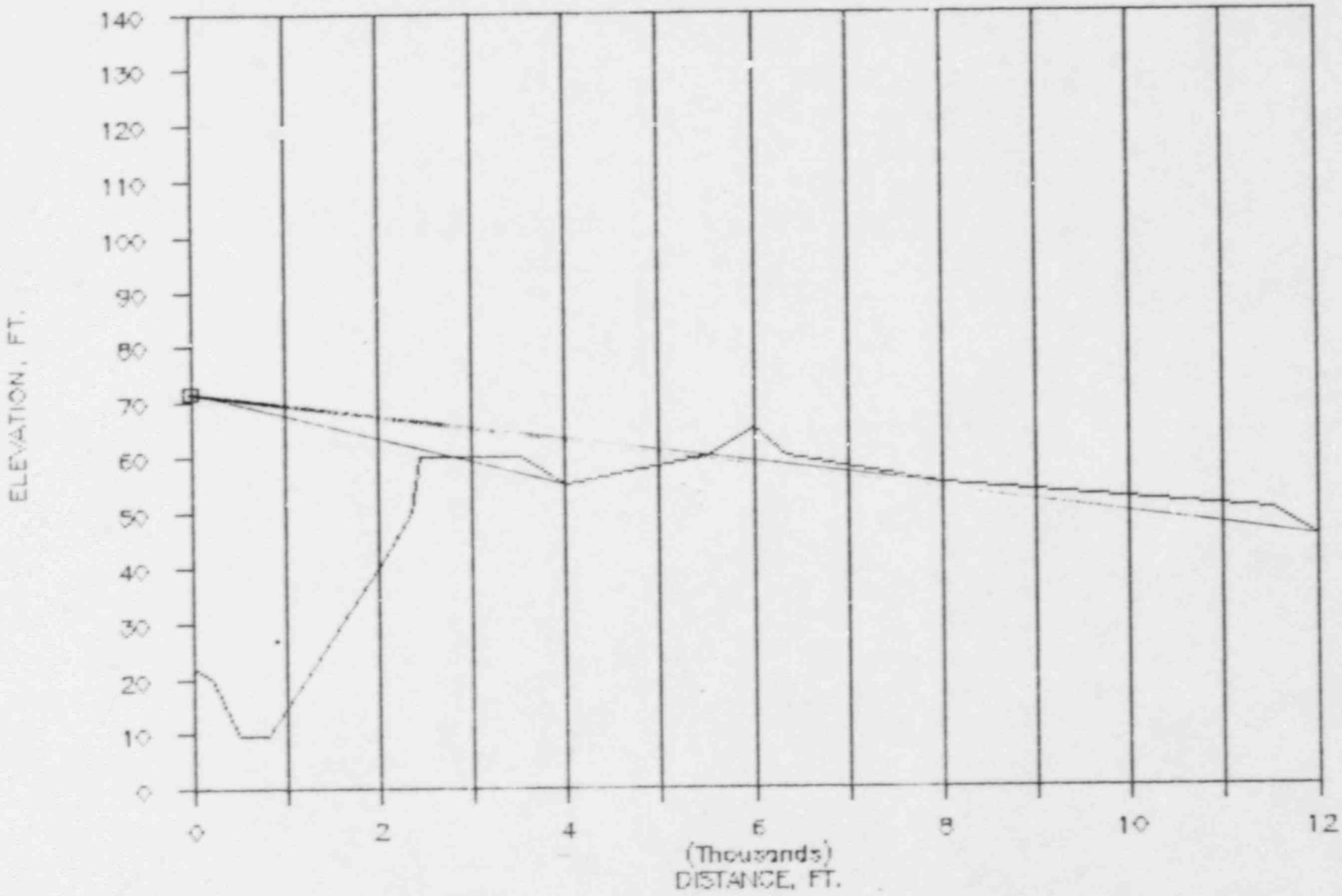
ARTIFICIAL ISLAND 216

AZIMUTH, WSW

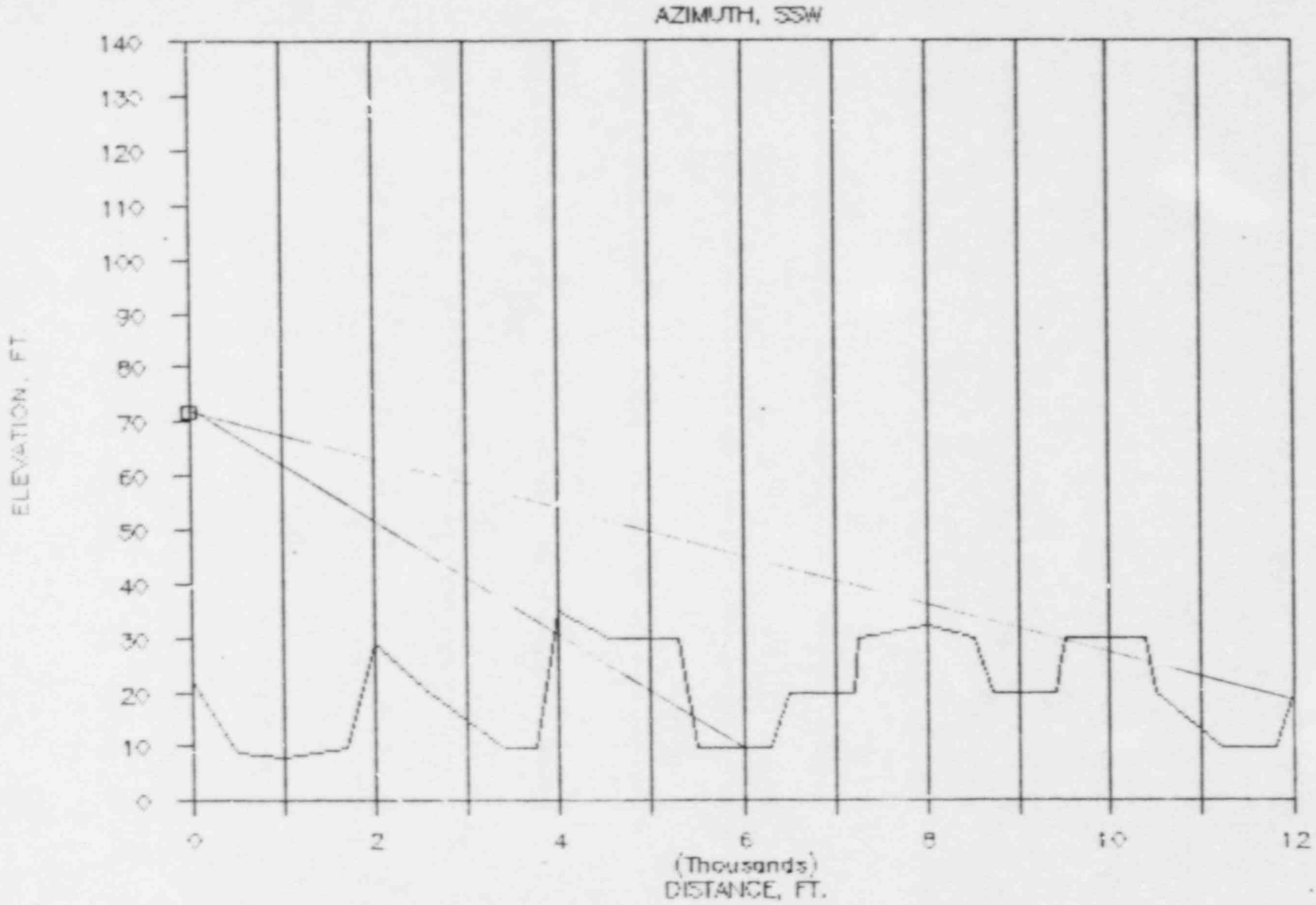


ARTIFICIAL ISLAND 216

AZIMUTH, SW

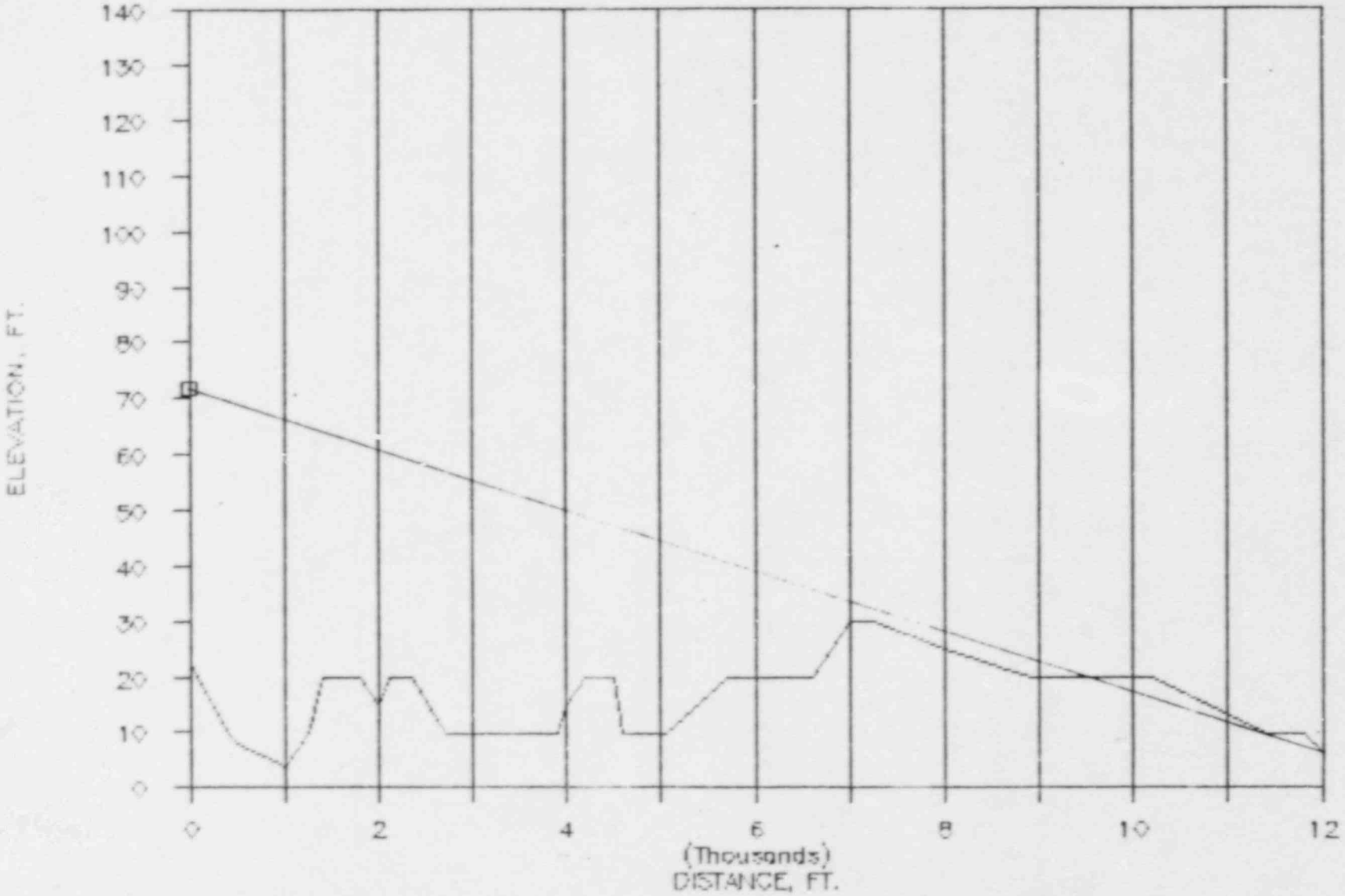


ARTIFICIAL ISLAND 216



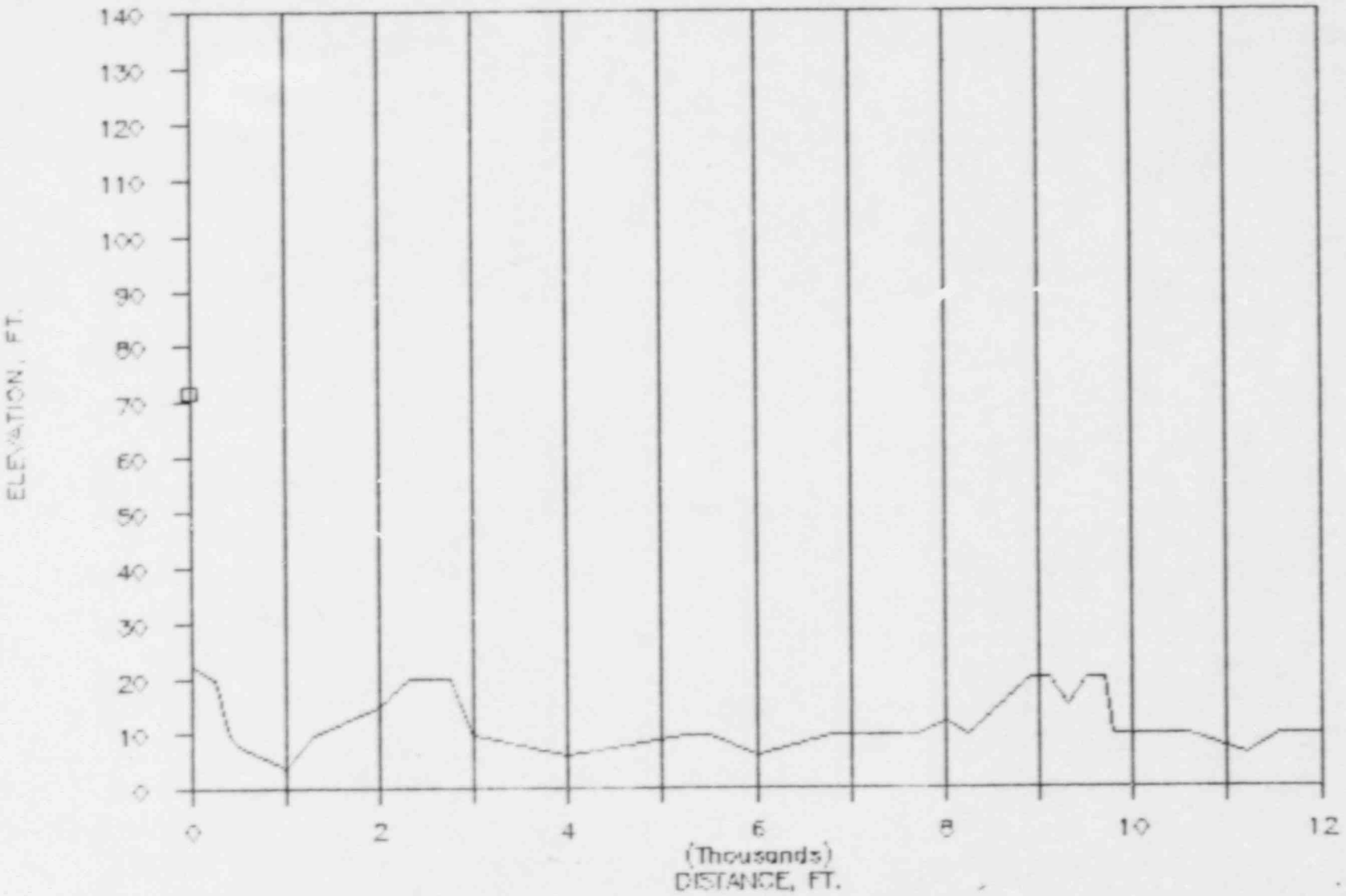
ARTIFICIAL ISLAND 216

AZIMUTH, S



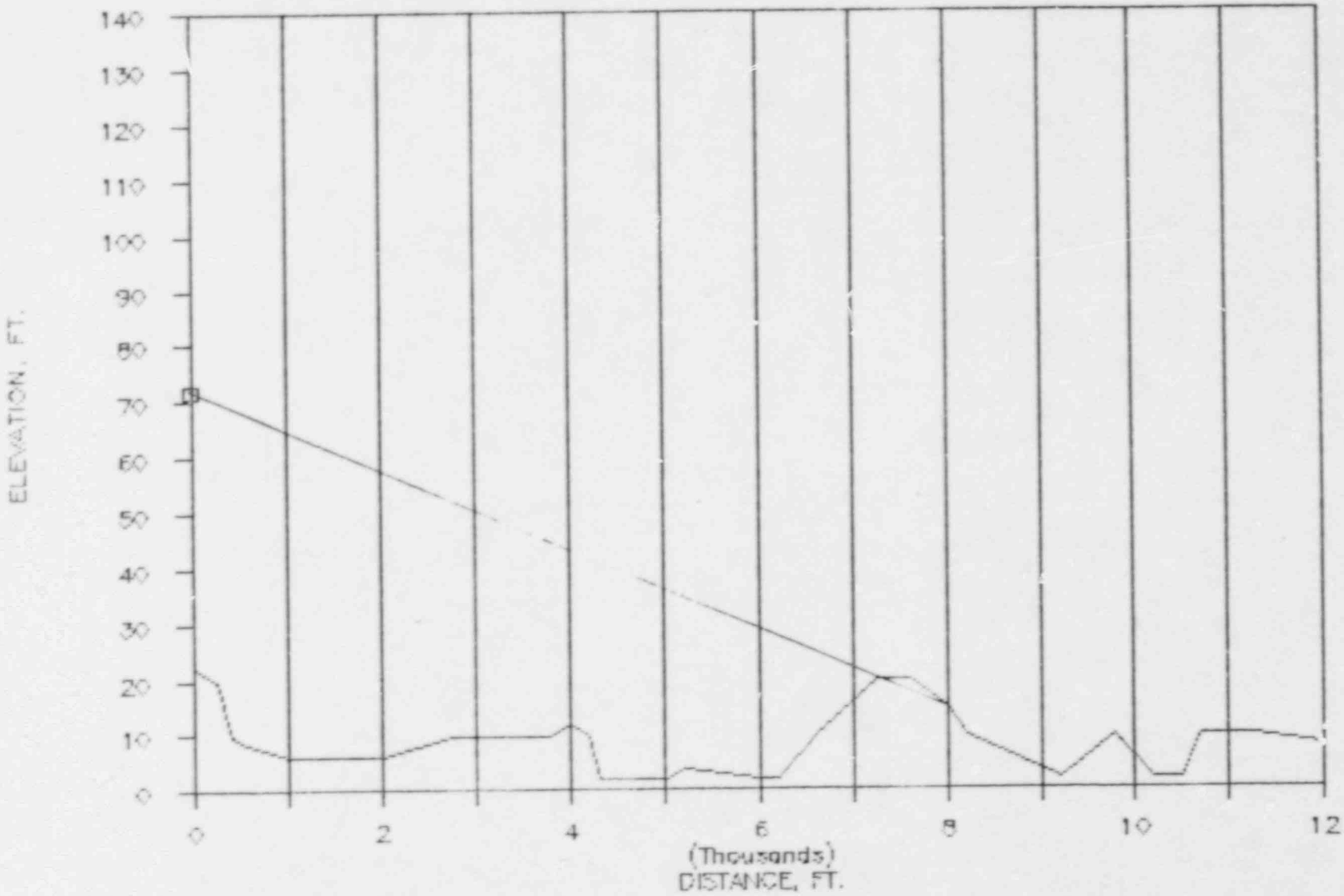
ARTIFICIAL ISLAND 216

AZIMUTH, SSE

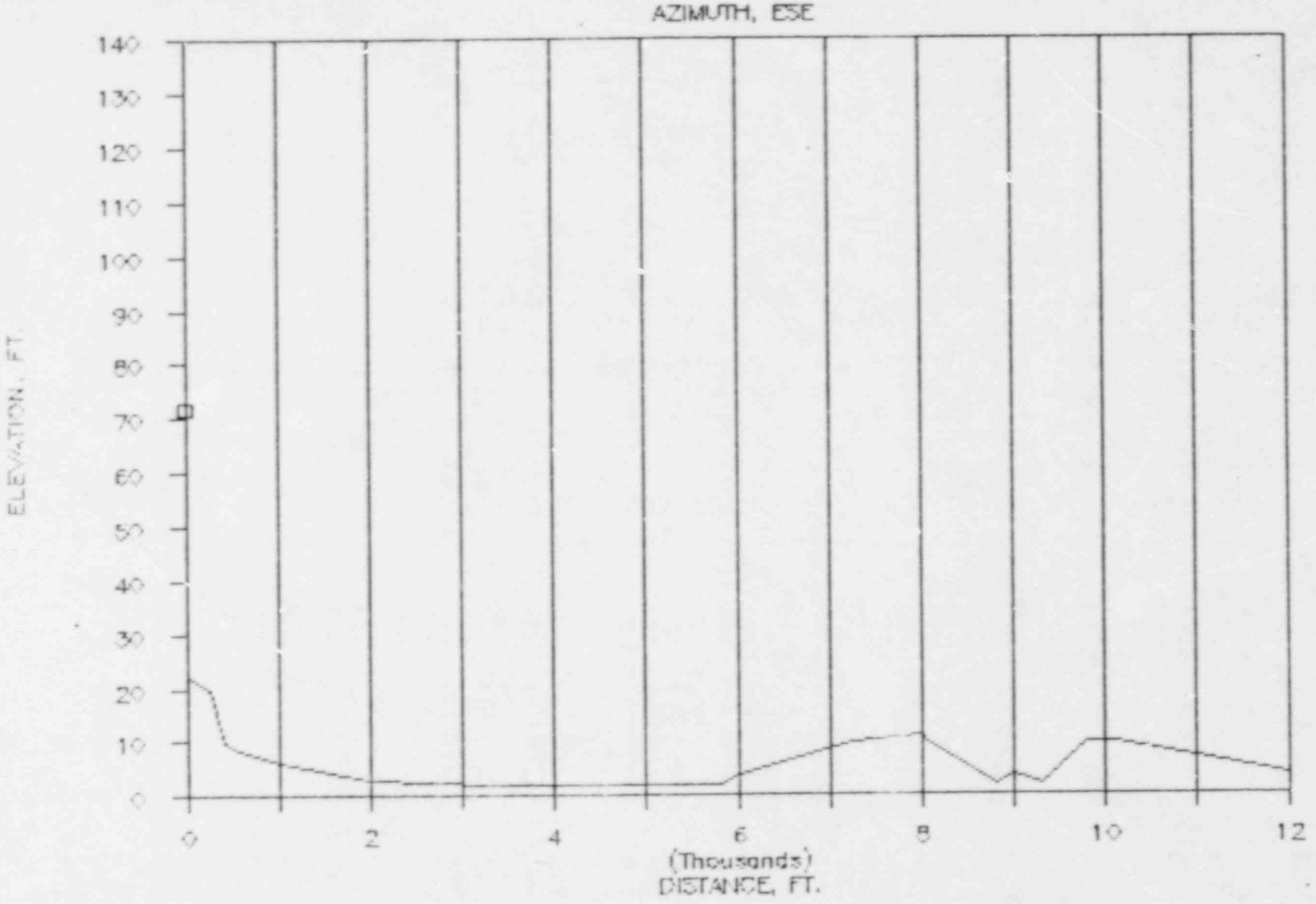


ARTIFICIAL ISLAND 216

AZIMUTH, SE



ARTIFICIAL ISLAND 216



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #216-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	19.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	9.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	8.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	3.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	2.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	2.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	2.00	SOFT	0.	NO	0.	0.
8	500.	67.50	20.00	SOFT	0.	NO	0.	0.
9	1000.	67.50	9.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	9.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	21.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	2.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	3.00	SOFT	0.	NO	0.	0.
14	12000.	67.50	12.00	SOFT	0.	NO	0.	0.
15	500.	45.00	20.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	10.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	12.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	12.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	3.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	3.00	SOFT	0.	NO	0.	0.
21	12000.	45.00	7.00	SOFT	0.	NO	0.	0.
22	500.	22.50	20.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	18.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	25.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	6.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	4.00	SOFT	0.	NO	0.	0.
27	8000.	22.50	8.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	12.00	SOFT	0.	NO	0.	0.
29	500.	.00	25.00	SOFT	0.	NO	0.	0.
30	1000.	.00	25.00	SOFT	0.	NO	0.	0.
31	2000.	.00	23.00	SOFT	0.	NO	0.	0.
32	4000.	.00	2.00	SOFT	0.	NO	0.	0.
33	6000.	.00	10.00	SOFT	0.	NO	0.	0.
34	8000.	.00	29.00	SOFT	0.	NO	0.	0.
35	12000.	.00	3.00	SOFT	0.	YES	8000.	25.
36	500.	337.50	22.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	25.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	40.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	2.00	SOFT	0.	YES	2250.	40.
40	6000.	337.50	45.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	43.00	SOFT	0.	NO	0.	0.
42	12000.	337.50	20.00	SOFT	0.	YES	9500.	40.
43	500.	315.00	15.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	35.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	53.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	10.00	SOFT	0.	YES	2000.	53.
47	6000.	315.00	2.00	SOFT	0.	YES	2000.	53.
48	8000.	315.00	25.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	50.00	SOFT	0.	NO	0.	0.
50	500.	292.50	10.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	35.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	38.00	SOFT	0.	YES	1800.	50.
53	4000.	292.50	4.00	SOFT	0.	YES	1800.	53.
54	6000.	292.50	25.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	50.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	18.00	SOFT	0.	YES	9100.	50.
57	500.	270.00	8.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	30.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	51.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	53.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	2.00	SOFT	0.	YES	4000.	53.
62	8000.	270.00	45.00	SOFT	0.	YES	7750.	50.
63	12000.	270.00	52.00	SOFT	0.	NO	0.	0.
64	500.	247.50	10.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	51.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	51.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	55.00	SOFT	0.	YES	3700.	60.
68	6000.	247.50	40.00	SOFT	0.	YES	4800.	60.
69	8000.	247.50	30.00	SOFT	0.	YES	4800.	60.
70	12000.	247.50	33.00	SOFT	0.	YES	4800.	60.
71	500.	225.00	10.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	15.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
73	2000.	225.00	40.00	SOFT	0.	NO	0.	0.
74	4000.	225.00	55.00	SOFT	0.	YES	3500.	60.
75	6000.	225.00	65.00	SOFT	0.	NO	0.	0.
76	8000.	225.00	55.00	SOFT	0.	YES	6000.	65.
77	12000.	225.00	45.00	SOFT	0.	YES	6000.	65.
78	500.	202.50	9.00	SOFT	0.	NO	0.	0.
79	1000.	202.50	8.00	SOFT	0.	NO	0.	0.
80	2000.	202.50	29.00	SOFT	0.	NO	0.	0.
81	4000.	202.50	35.00	SOFT	0.	NO	0.	0.
82	6000.	202.50	10.00	SOFT	0.	YES	5300.	30.
83	8000.	202.50	32.00	SOFT	0.	NO	0.	0.
84	12000.	202.50	20.00	SOFT	0.	YES	10400.	30.
85	500.	180.00	8.00	SOFT	0.	NO	0.	0.
86	1000.	180.00	4.00	SOFT	0.	NO	0.	0.
87	2000.	180.00	15.00	SOFT	0.	NO	0.	0.
88	4000.	180.00	15.00	SOFT	0.	NO	0.	0.
89	6000.	180.00	20.00	SOFT	0.	NO	0.	0.
90	8000.	180.00	25.00	SOFT	0.	NO	0.	0.
91	12000.	180.00	6.00	SOFT	0.	YES	10200.	20.
92	500.	157.50	8.00	SOFT	0.	NO	0.	0.
93	1000.	157.50	4.00	SOFT	0.	NO	0.	0.
94	2000.	157.50	15.00	SOFT	0.	NO	0.	0.
95	4000.	157.50	6.00	SOFT	0.	NO	0.	0.
96	6000.	157.50	6.00	SOFT	0.	NO	0.	0.
97	8000.	157.50	12.00	SOFT	0.	NO	0.	0.
98	12000.	157.50	10.00	SOFT	0.	NO	0.	0.
99	500.	135.00	9.00	SOFT	0.	NO	0.	0.
100	1000.	135.00	6.00	SOFT	0.	NO	0.	0.
101	2000.	135.00	6.00	SOFT	0.	NO	0.	0.
102	4000.	135.00	12.00	SOFT	0.	NO	0.	0.
103	6000.	135.00	2.00	SOFT	0.	NO	0.	0.
104	8000.	135.00	15.00	SOFT	0.	YES	7600.	20.
105	12000.	135.00	8.00	SOFT	0.	NO	0.	0.
106	500.	112.50	9.00	SOFT	0.	NO	0.	0.
107	1000.	112.50	6.00	SOFT	0.	NO	0.	0.
108	2000.	112.50	3.00	SOFT	0.	NO	0.	0.
109	4000.	112.50	2.00	SOFT	0.	NO	0.	0.
110	6000.	112.50	4.00	SOFT	0.	NO	0.	0.
111	8000.	112.50	11.00	SOFT	0.	NO	0.	0.
112	12000.	112.50	4.00	SOFT	0.	NO	0.	0.

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #216-PEN10
NOISE SOURCE POWER LEVEL INPUT

INDEX	SOURCE	DBA	DBC	31.5	63	125	250	500	1000	2000	4000	8000 (HZ)
1	ART ISL-PEN10	159.4	160.2	.0	.0	133.0	126.0	157.0	155.0	153.0	146.0	140.0

XD= .00 YD= .00 ZD= 22.00 HEIGHT ABOVE GROUND= 50.00

PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #216-PEN10
METEOROLOGICAL INPUT CONDITIONS

H1= 9.14 METERS H2= 45.72 METERS

YEAR	SEASON	MONTH	DATE	HOUR	WIND DIRECTION	WIND SPEED(MPS) H1	WIND SPEED(MPS) H2	TEMPERATURE(C) H1	TEMPERATURE(C) H2	RELATIVE HUMIDITY	BAROMETRIC PRESSURE(MM OF HG)
1984		8	23	12	320.0	1.8	2.2	22.0	21.6	75.0	748.)

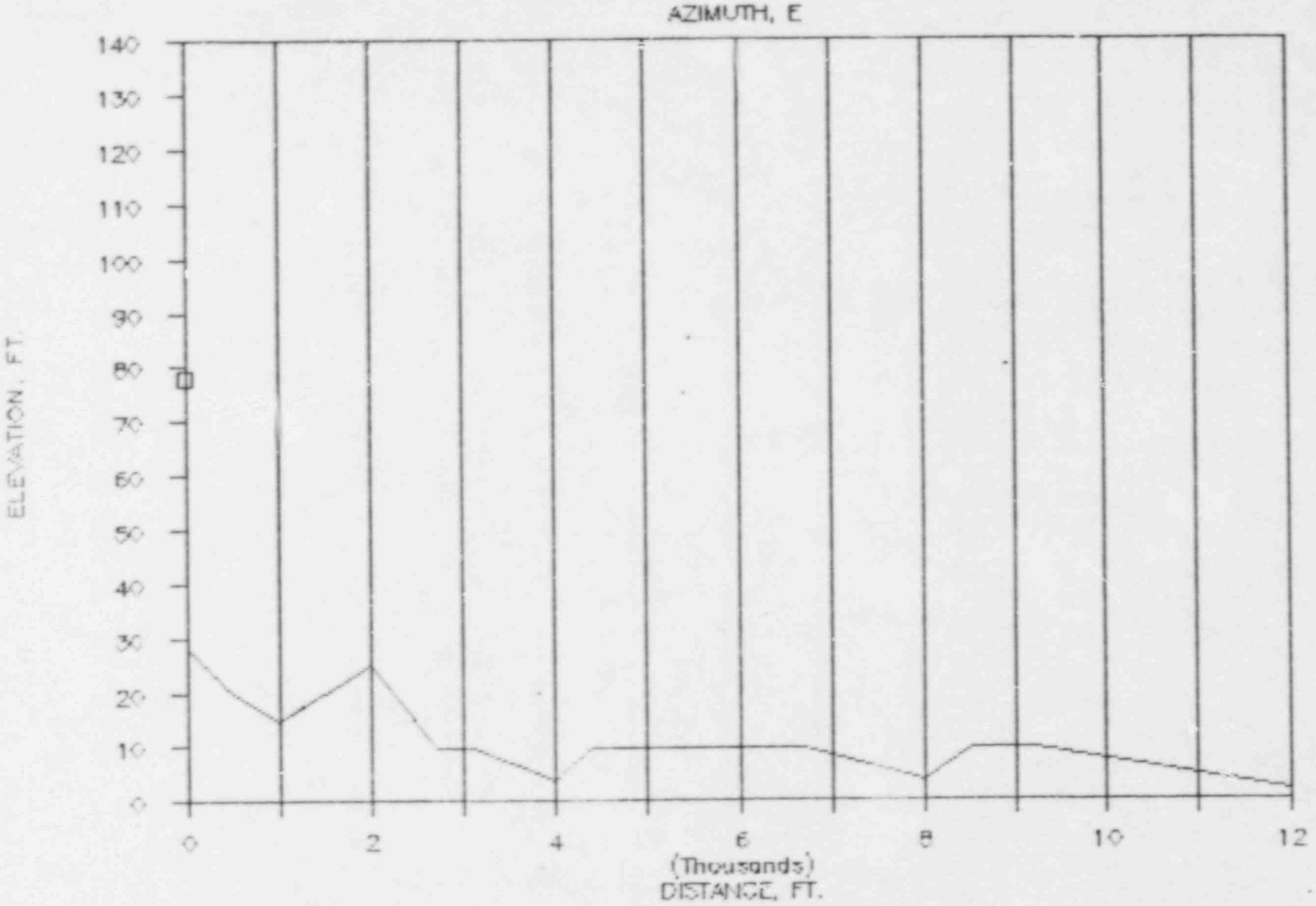
PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #216-PEN10

SIREN SOUND LEVELS IN DBC
UNDER MET CONDITION 1

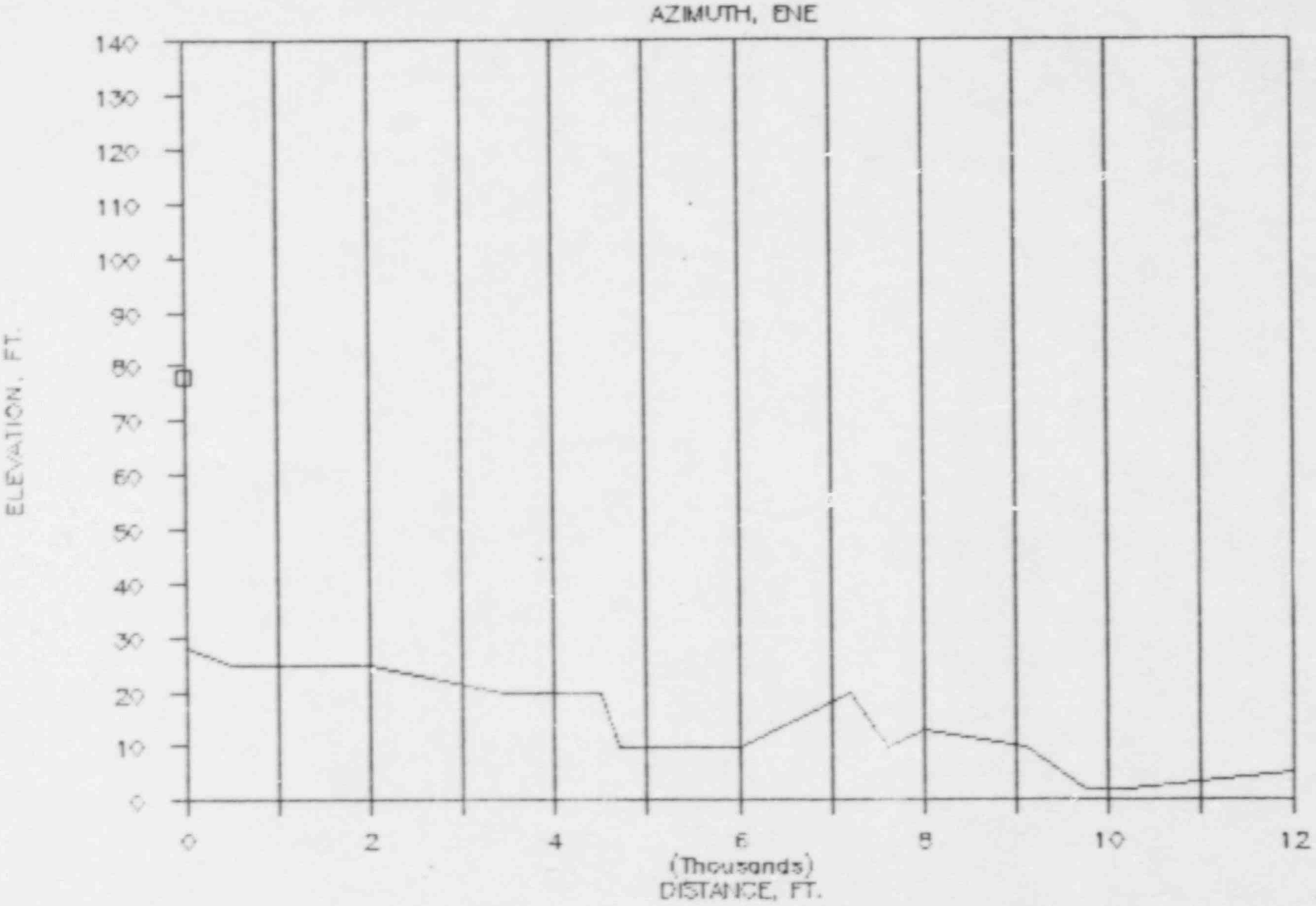
DISTANCE IN FEET

AZIMUTH	500.	1000.	2000.	4000.	6000.	8000.	12000.
E	107.	97.	87.	80.	76.	72.	66.
ENE	107.	97.	87.	80.	76.	72.	66.
NE	107.	97.	87.	80.	76.	72.	66.
NNE	107.	97.	81.	61.	49.	43.	36.
N	107.	97.	79.	58.	48.	43.	36.
NNW	107.	96.	78.	56.	47.	42.	36.
NW	107.	96.	78.	56.	47.	42.	36.
WNW	107.	96.	78.	57.	47.	42.	36.
W	107.	97.	80.	59.	48.	43.	36.
WSW	107.	97.	82.	63.	49.	44.	36.
SW	107.	97.	87.	74.	76.	66.	59.
SSW	107.	97.	87.	80.	68.	72.	61.
S	107.	97.	87.	80.	76.	72.	61.
SSE	107.	97.	87.	80.	76.	72.	66.
SE	107.	97.	87.	80.	76.	67.	60.
ESE	107.	97.	87.	80.	76.	72.	66.

ARTIFICIAL ISLAND 217



ARTIFICIAL ISLAND 217



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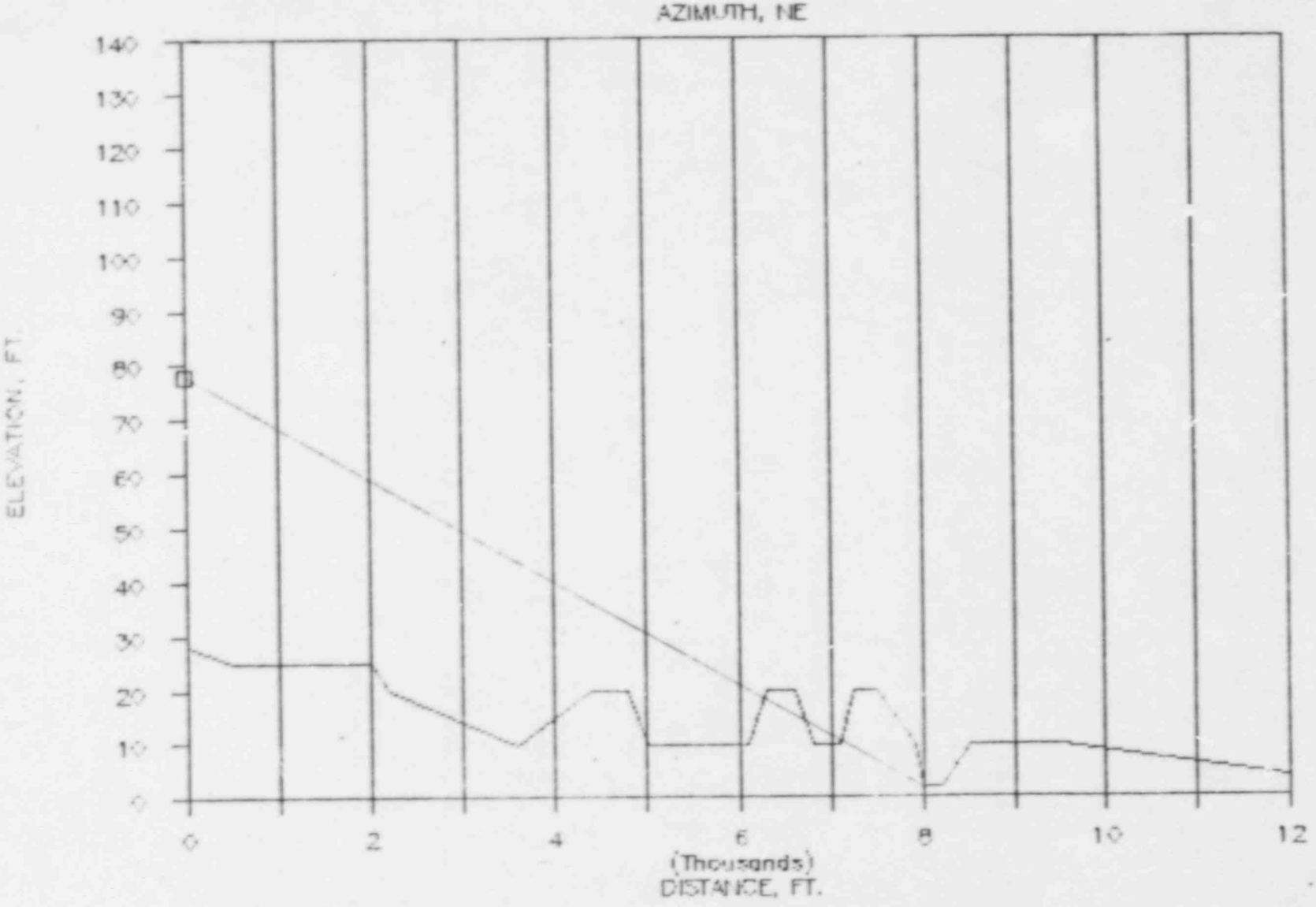
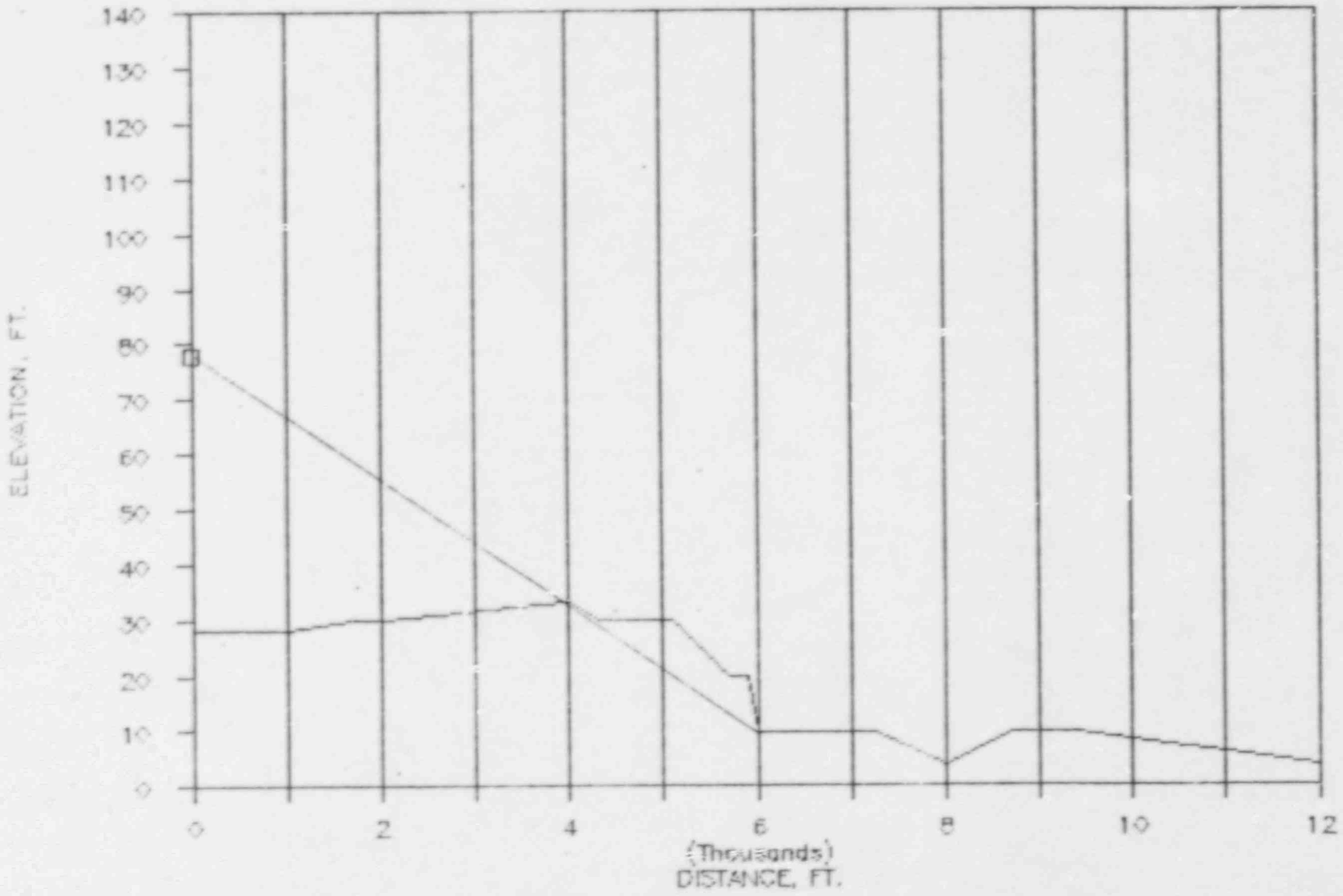


ARTIFICIAL ISLAND 217

AZIMUTH, NINE



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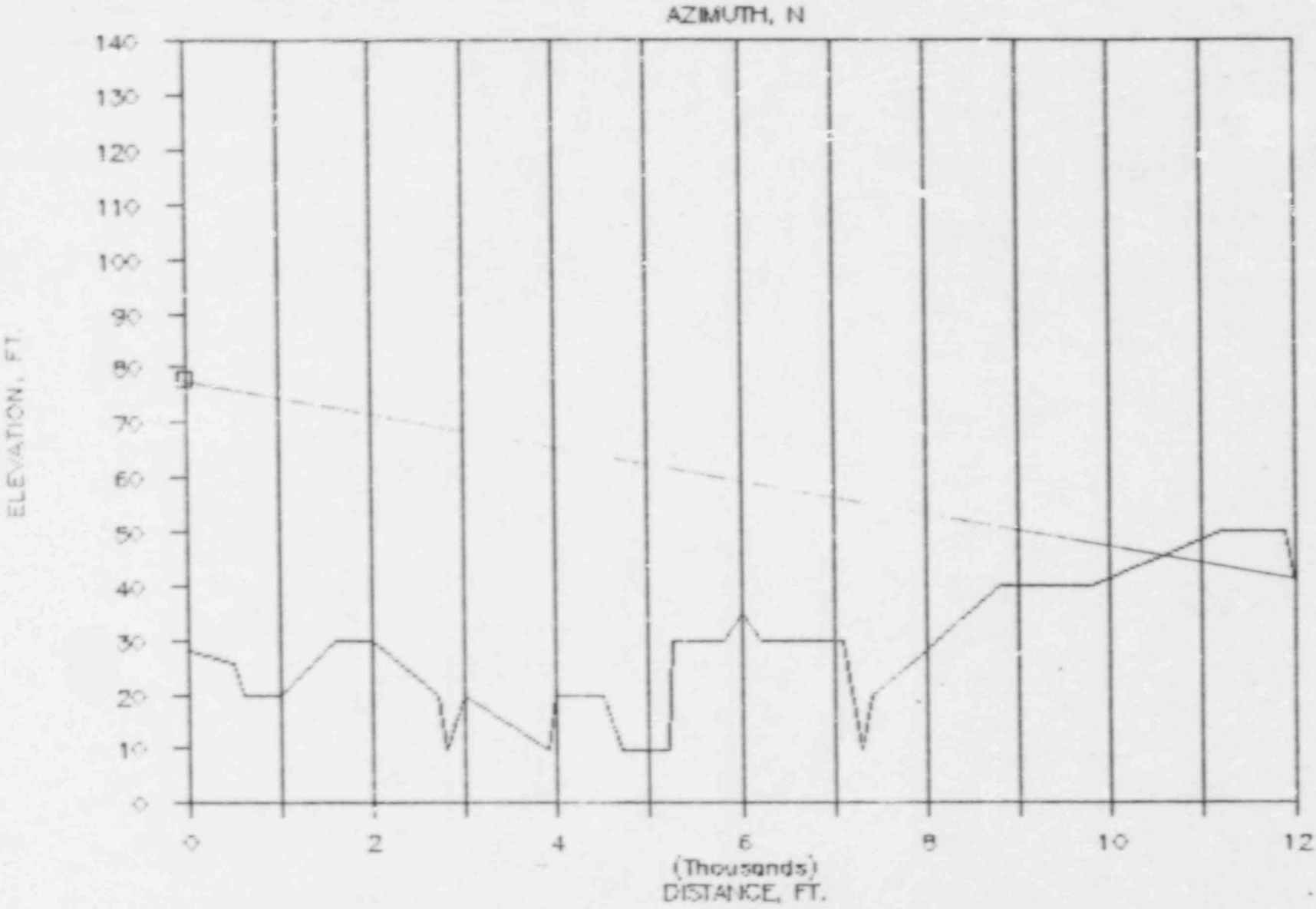
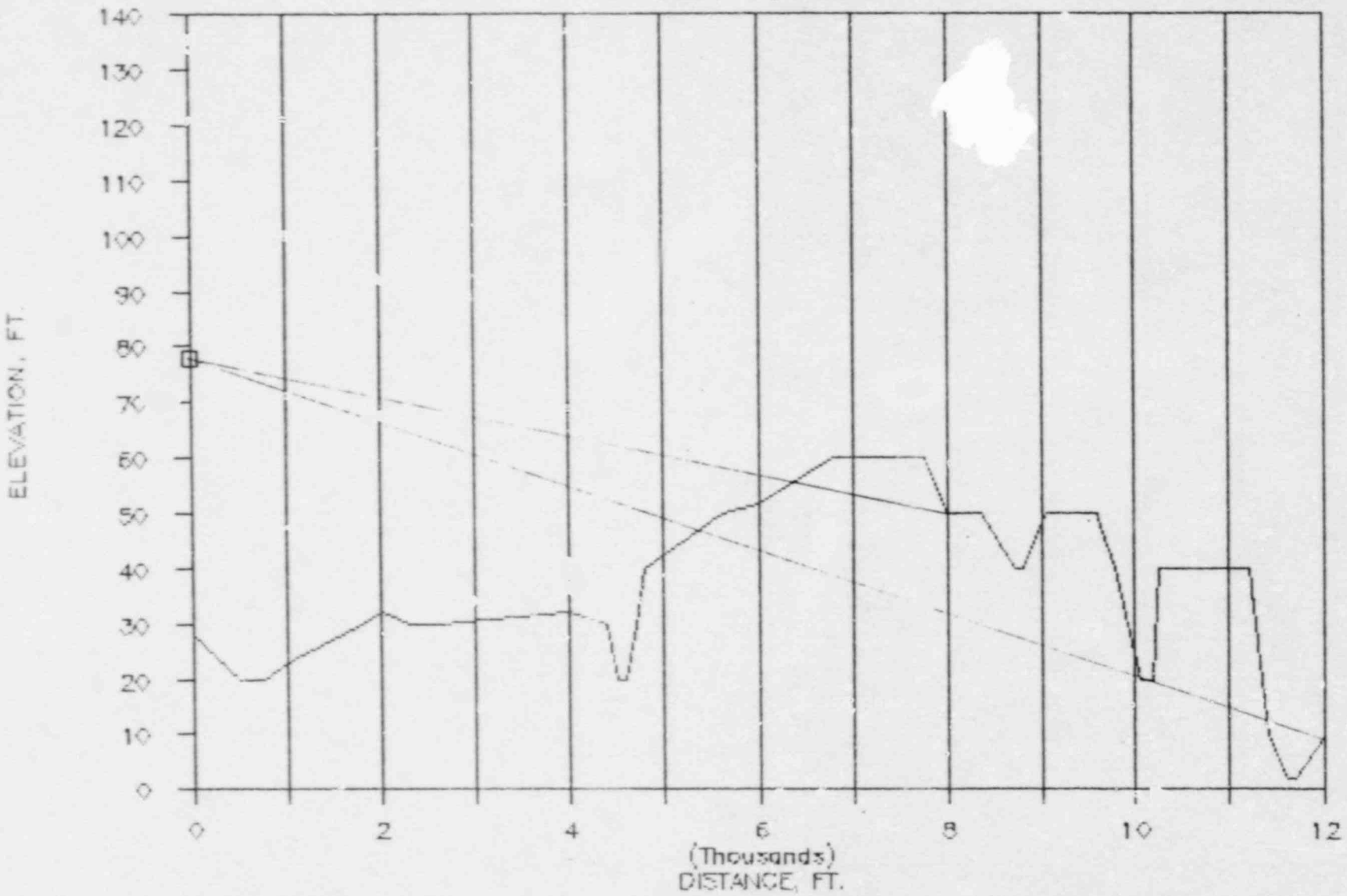


ARTIFICIAL ISLAND 217

AZIMUTH, NNW



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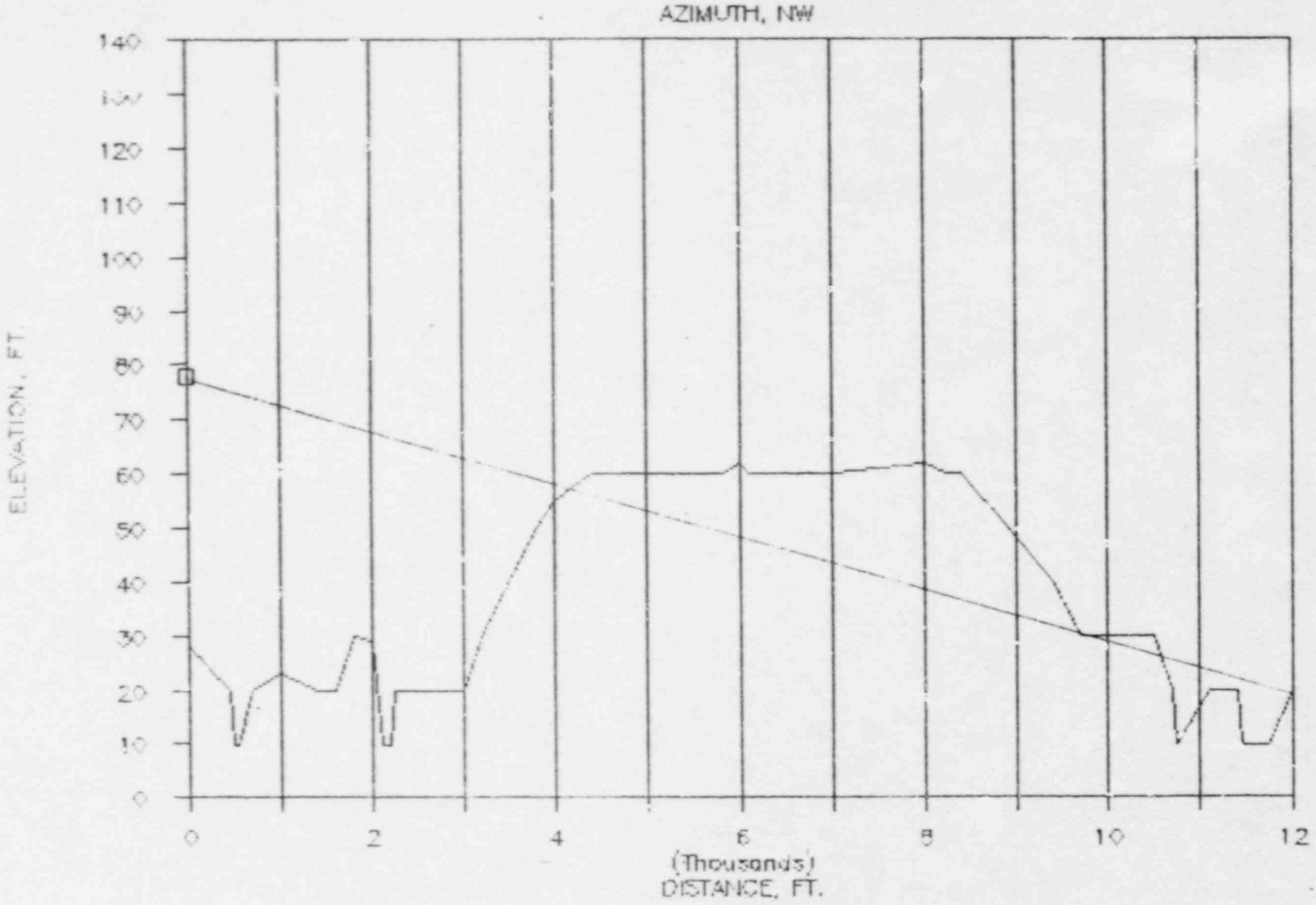
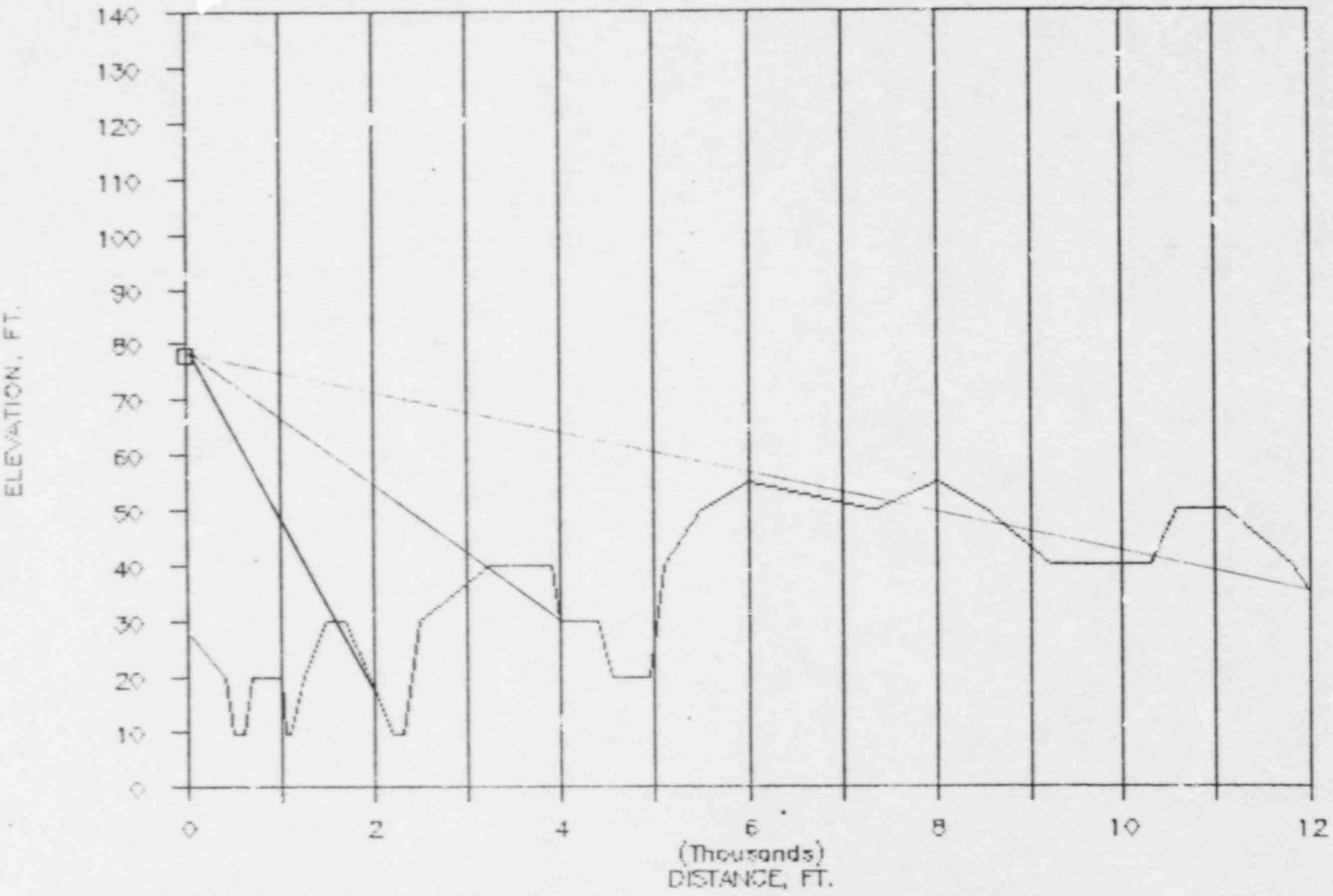
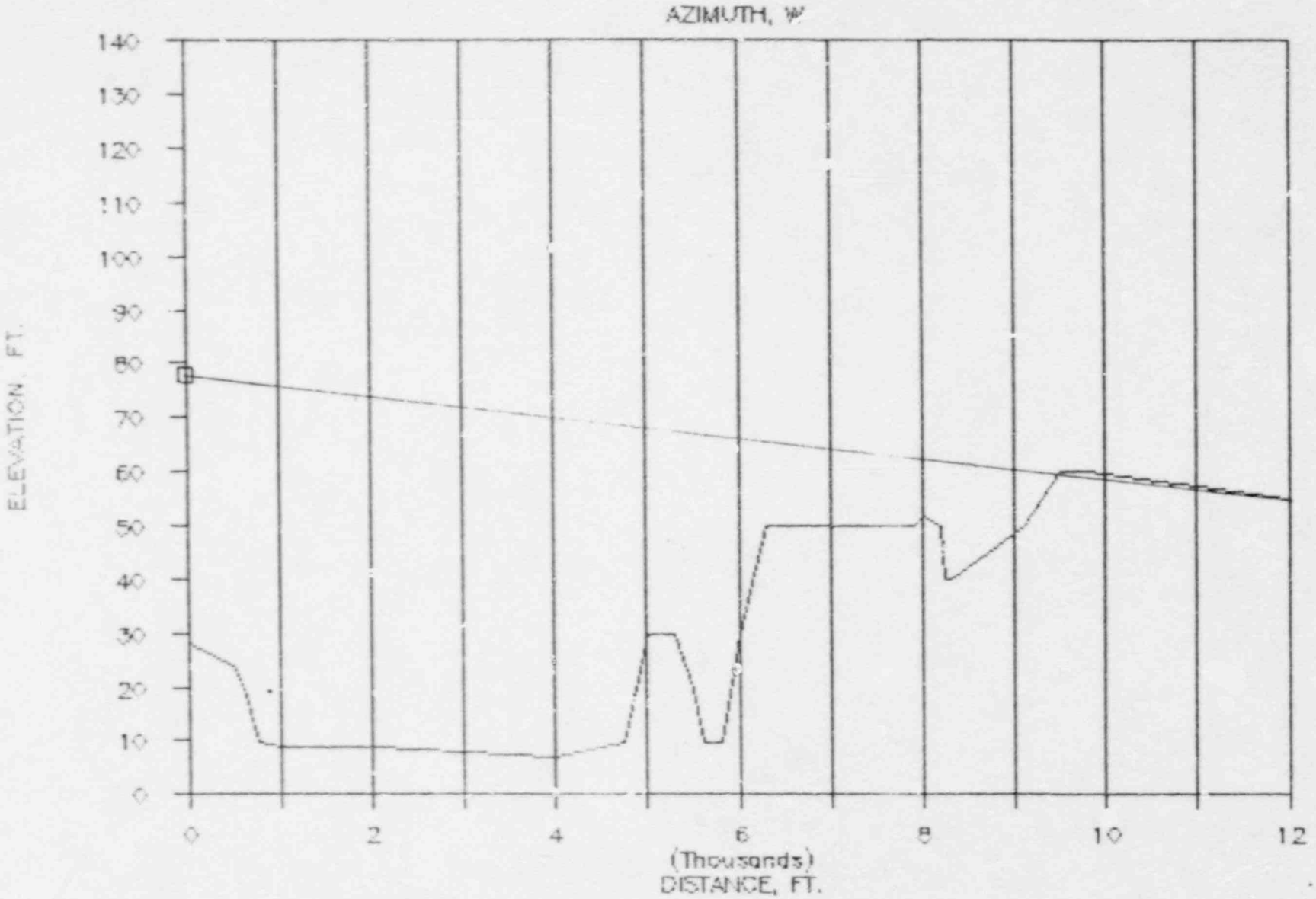


ARTIFICIAL ISLAND 217

AZIMUTH, WNW

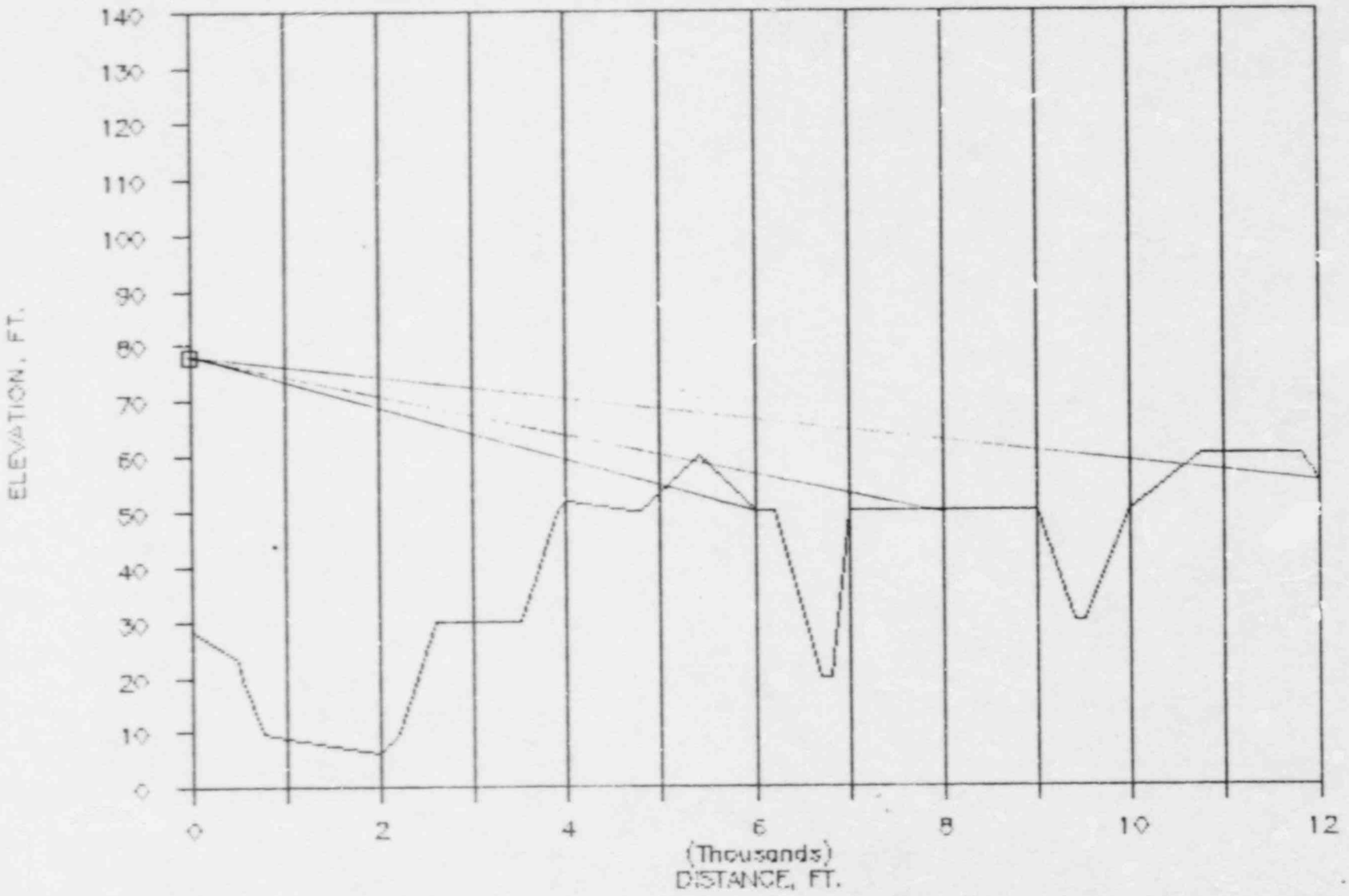


ARTIFICIAL ISLAND 217



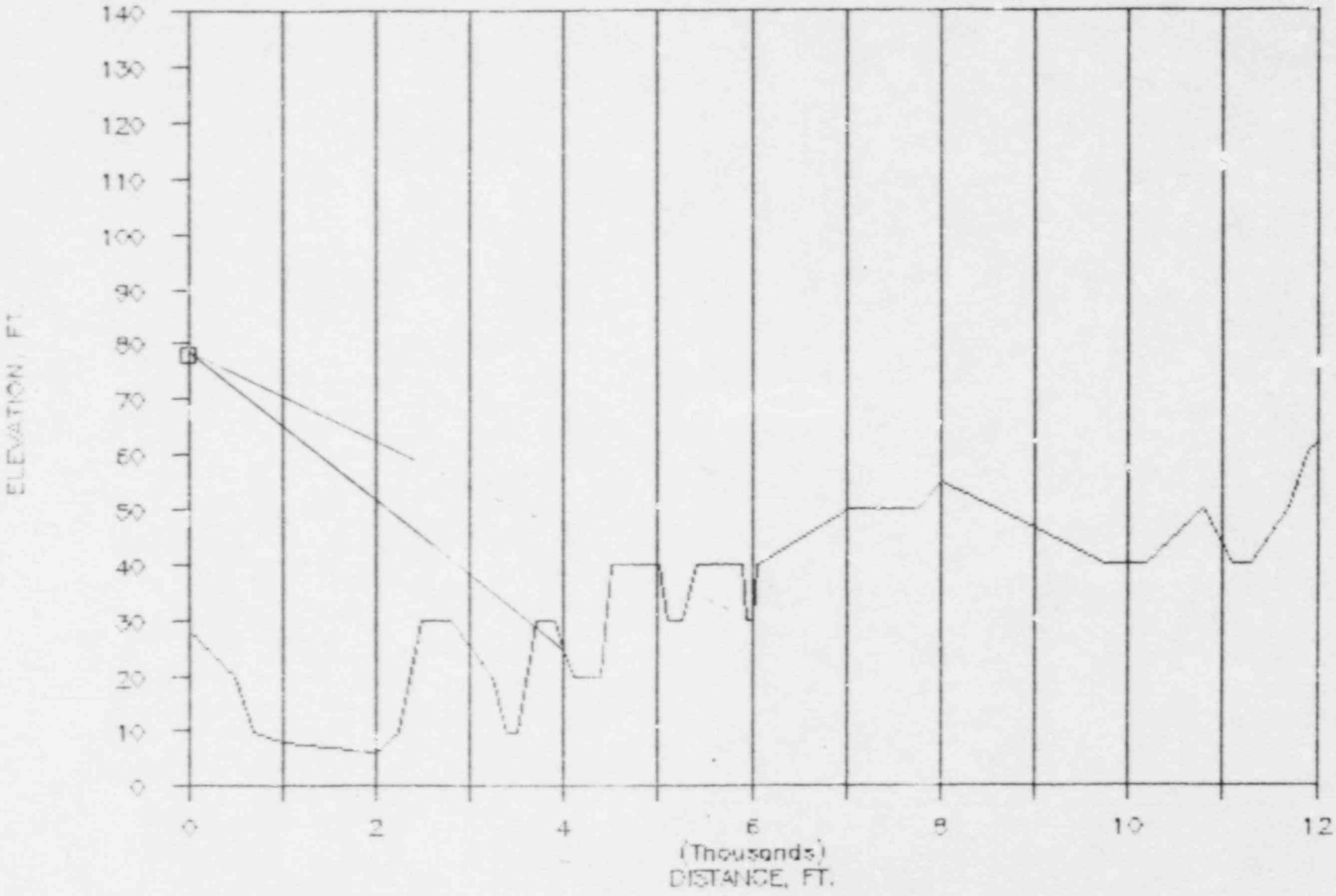
ARTIFICIAL ISLAND 217

AZIMUTH, WSW



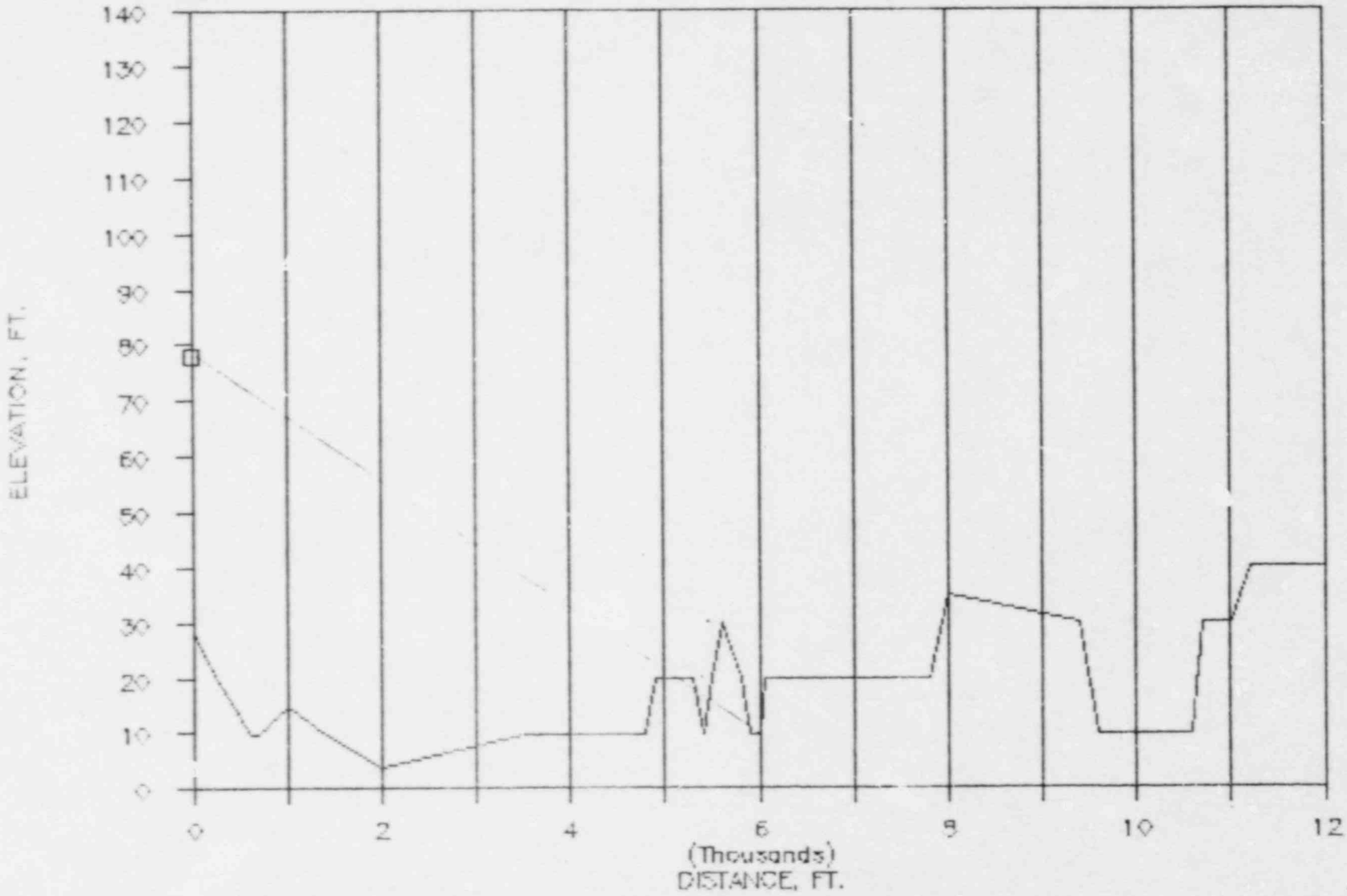
ARTIFICIAL ISLAND 217

AZIMUTH, SW

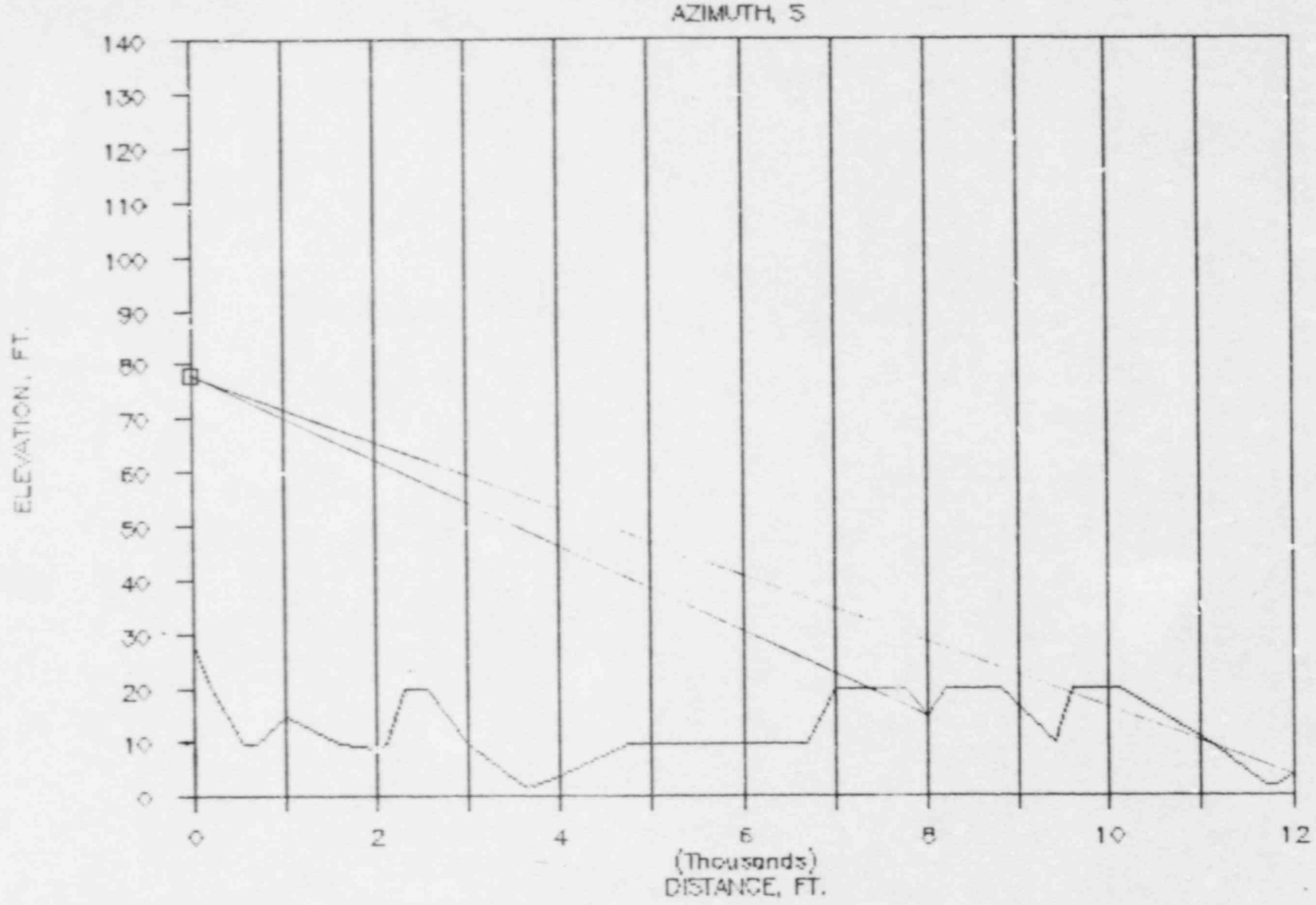


ARTIFICIAL ISLAND 217

AZIMUTH, SSW

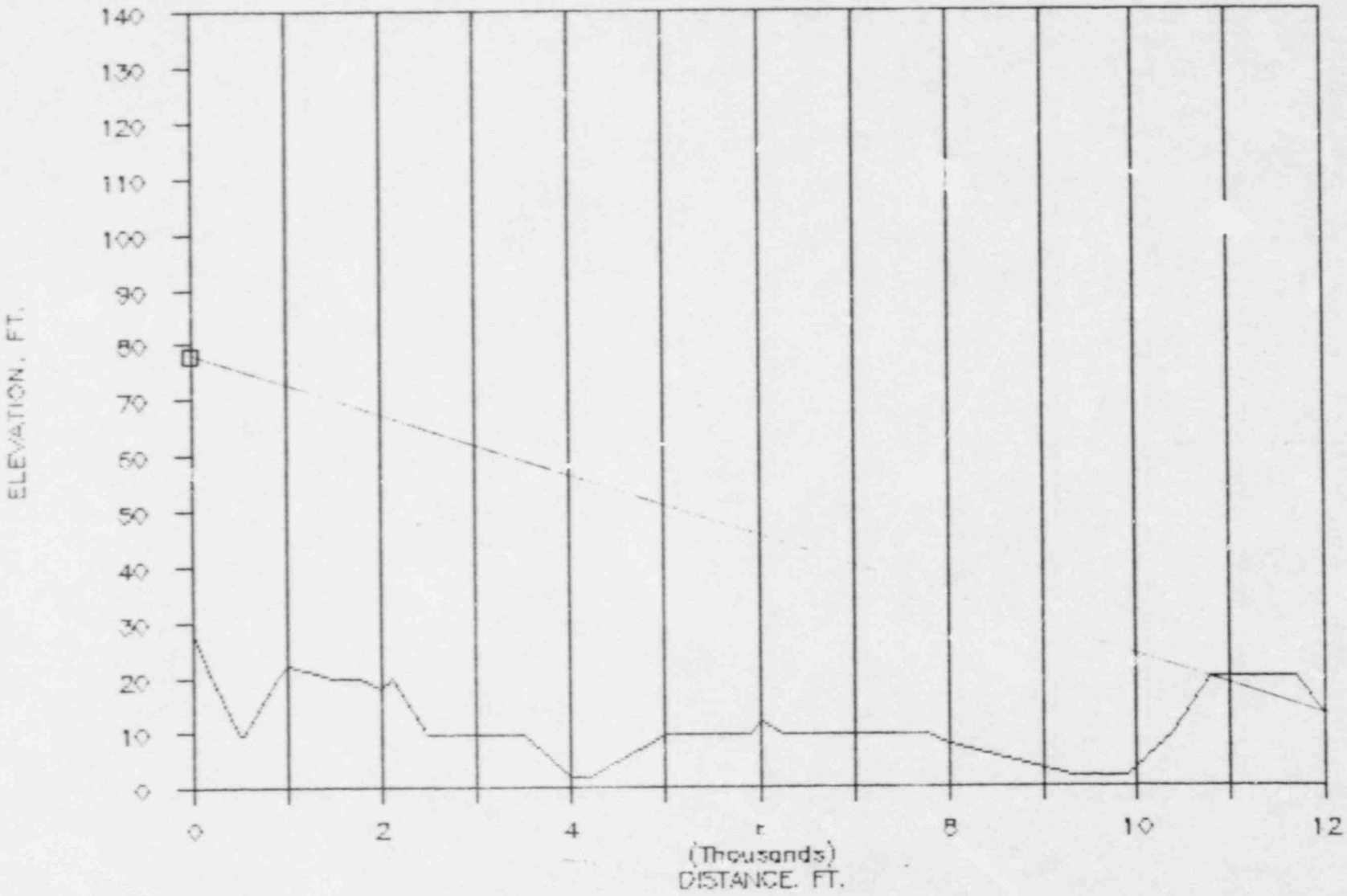


ARTIFICIAL ISLAND 217

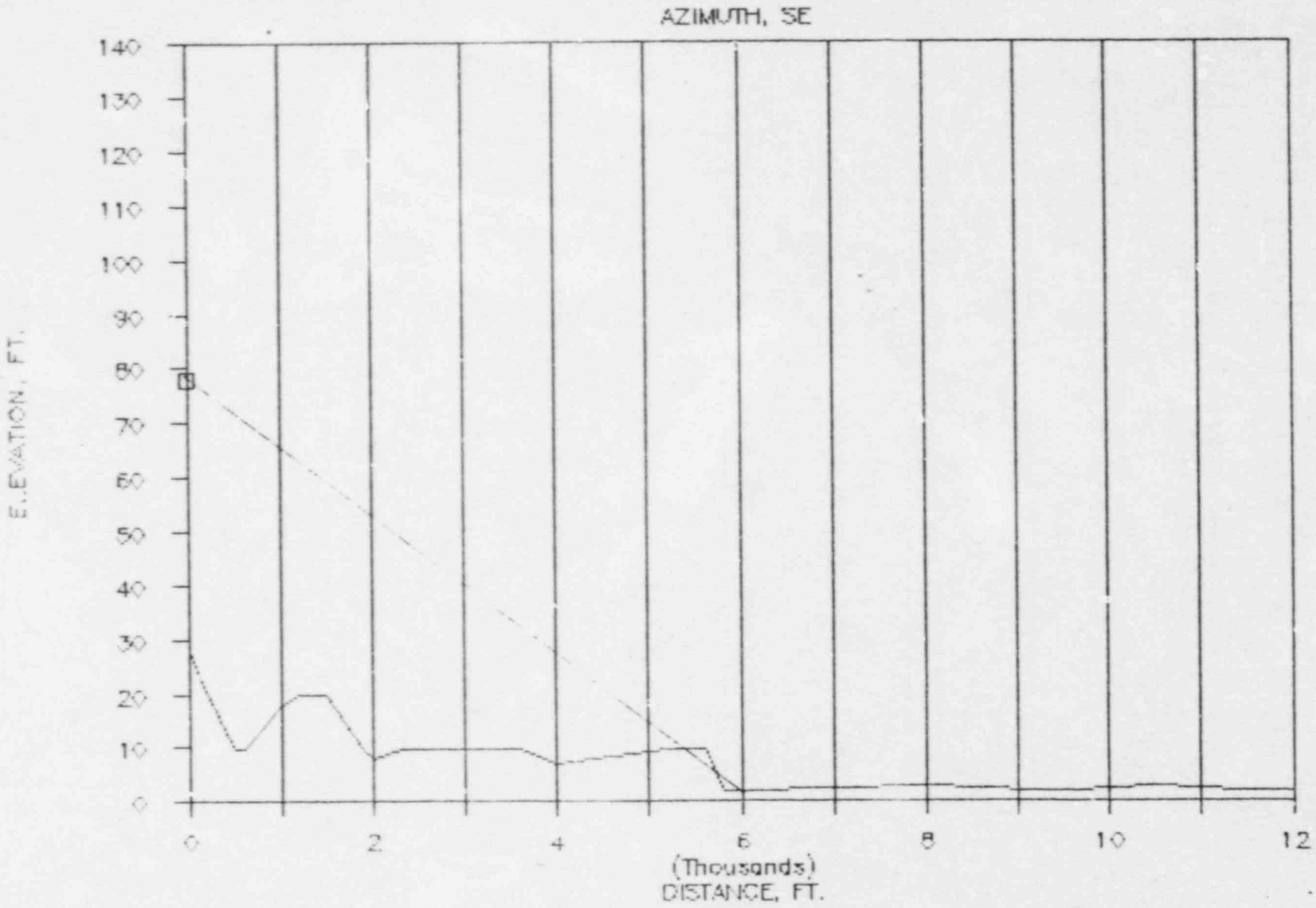


ARTIFICIAL ISLAND 217

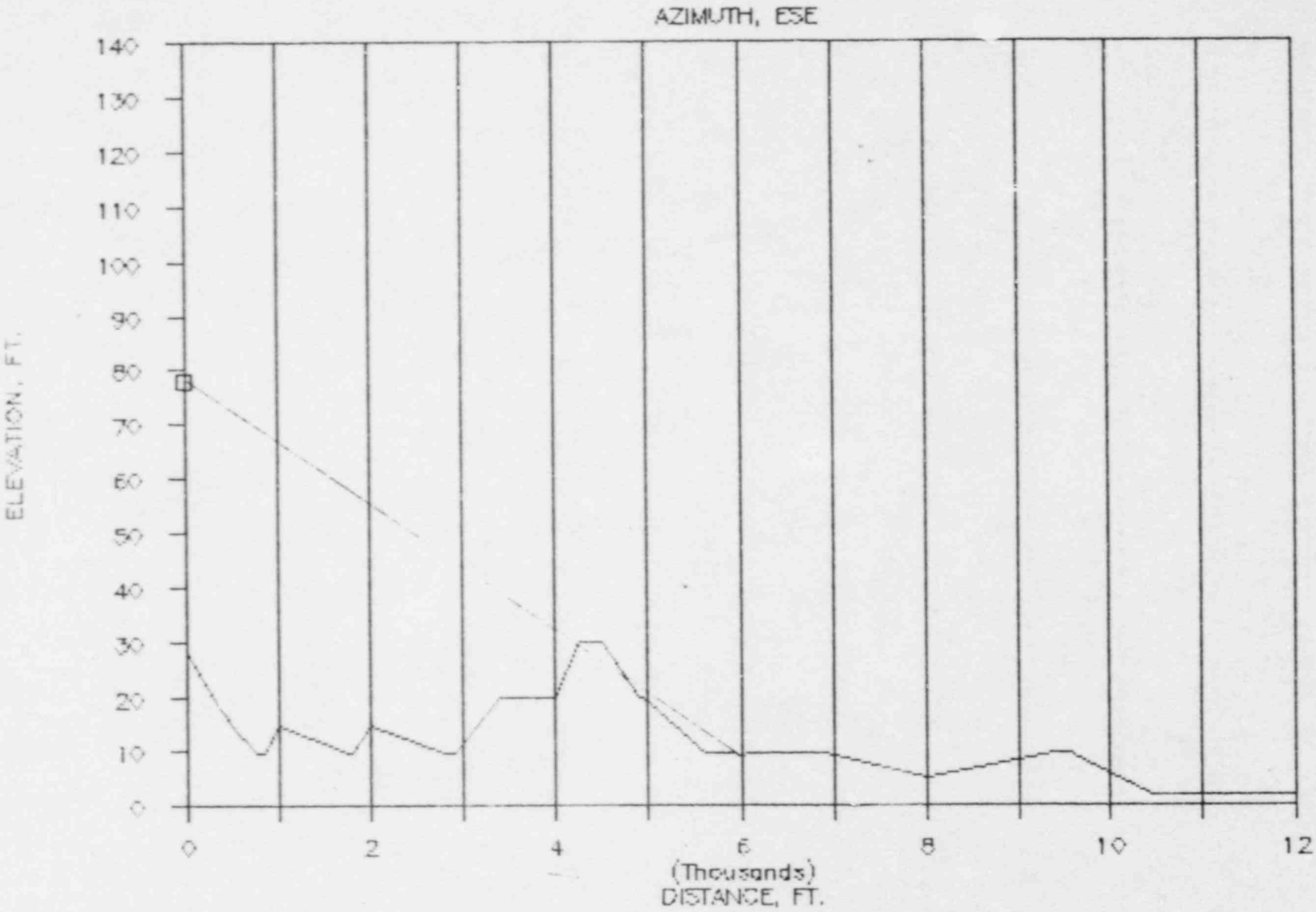
AZIMUTH, SSE



ARTIFICIAL ISLAND 217



ARTIFICIAL ISLAND 217



PUBLIC SERVICE ELECTRIC & GAS CO
ARTIFICIAL ISLAND ANS SIREN #217-PEN10
SOURCE-RECEIVER TOPOGRAPHICAL INPUTS

ALL BEARINGS ARE WITH RESPECT TO THE NORTH MEASURING CLOCKWISE

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
1	500.	90.00	20.00	SOFT	0.	NO	0.	0.
2	1000.	90.00	15.00	SOFT	0.	NO	0.	0.
3	2000.	90.00	25.00	SOFT	0.	NO	0.	0.
4	4000.	90.00	4.00	SOFT	0.	NO	0.	0.
5	6000.	90.00	10.00	SOFT	0.	NO	0.	0.
6	8000.	90.00	4.00	SOFT	0.	NO	0.	0.
7	12000.	90.00	2.00	SOFT	0.	NO	0.	0.
8	500.	67.50	25.00	SOFT	0.	NO	0.	0.
9	1000.	67.50	25.00	SOFT	0.	NO	0.	0.
10	2000.	67.50	25.00	SOFT	0.	NO	0.	0.
11	4000.	67.50	20.00	SOFT	0.	NO	0.	0.
12	6000.	67.50	10.00	SOFT	0.	NO	0.	0.
13	8000.	67.50	13.00	SOFT	0.	NO	0.	0.
14	12000.	67.50	5.00	SOFT	0.	NO	0.	0.
15	500.	45.00	25.00	SOFT	0.	NO	0.	0.
16	1000.	45.00	25.00	SOFT	0.	NO	0.	0.
17	2000.	45.00	25.00	SOFT	0.	NO	0.	0.
18	4000.	45.00	15.00	SOFT	0.	NO	0.	0.
19	6000.	45.00	10.00	SOFT	0.	NO	0.	0.
20	8000.	45.00	2.00	SOFT	0.	YES	7500.	20.
21	12000.	45.00	4.00	SOFT	0.	NO	0.	0.
22	500.	22.50	28.00	SOFT	0.	NO	0.	0.
23	1000.	22.50	28.00	SOFT	0.	NO	0.	0.
24	2000.	22.50	30.00	SOFT	0.	NO	0.	0.
25	4000.	22.50	33.00	SOFT	0.	NO	0.	0.
26	6000.	22.50	10.00	SOFT	0.	YES	5100.	30.
27	8000.	22.50	4.00	SOFT	0.	NO	0.	0.
28	12000.	22.50	4.00	SOFT	0.	NO	0.	0.
29	500.	.00	26.00	SOFT	0.	NO	0.	0.
30	1000.	.00	20.00	SOFT	0.	NO	0.	0.
31	2000.	.00	30.00	SOFT	0.	NO	0.	0.
32	4000.	.00	20.00	SOFT	0.	NO	0.	0.
33	6000.	.00	35.00	SOFT	0.	NO	0.	0.
34	8000.	.00	28.00	SOFT	0.	NO	0.	0.
35	12000.	.00	40.00	SOFT	0.	YES	11900.	50.
36	500.	337.50	20.00	SOFT	0.	NO	0.	0.

GRID POINT	DISTANCE	BEARING	HEIGHT	GROUND TYPE	FOLIAGE PENETRATION	INTERVENING OBSTRUCTIONS	DISTANCE TO HIGHEST OBSTRUCTION FROM SOURCE	HEIGHT OF OBSTRUCTION
37	1000.	337.50	22.00	SOFT	0.	NO	0.	0.
38	2000.	337.50	32.00	SOFT	0.	NO	0.	0.
39	4000.	337.50	32.00	SOFT	0.	NO	0.	0.
40	6000.	337.50	52.00	SOFT	0.	NO	0.	0.
41	8000.	337.50	50.00	SOFT	0.	YES	7750.	60.
42	12000.	337.50	10.00	SOFT	0.	YES	7750.	60.
43	500.	315.00	10.00	SOFT	0.	NO	0.	0.
44	1000.	315.00	23.00	SOFT	0.	NO	0.	0.
45	2000.	315.00	29.00	SOFT	0.	NO	0.	0.
46	4000.	315.00	55.00	SOFT	0.	NO	0.	0.
47	6000.	315.00	62.00	SOFT	0.	NO	0.	0.
48	8000.	315.00	62.00	SOFT	0.	NO	0.	0.
49	12000.	315.00	20.00	SOFT	0.	YES	8000.	62.
50	500.	292.50	10.00	SOFT	0.	NO	0.	0.
51	1000.	292.50	20.00	SOFT	0.	NO	0.	0.
52	2000.	292.50	18.00	SOFT	0.	YES	1700.	30.
53	4000.	292.50	30.00	SOFT	0.	YES	3900.	40.
54	6000.	292.50	55.00	SOFT	0.	NO	0.	0.
55	8000.	292.50	55.00	SOFT	0.	NO	0.	0.
56	12000.	292.50	35.00	SOFT	0.	YES	11100.	50.
57	500.	270.00	24.00	SOFT	0.	NO	0.	0.
58	1000.	270.00	9.00	SOFT	0.	NO	0.	0.
59	2000.	270.00	9.00	SOFT	0.	NO	0.	0.
60	4000.	270.00	7.00	SOFT	0.	NO	0.	0.
61	6000.	270.00	30.00	SOFT	0.	NO	0.	0.
62	8000.	270.00	52.00	SOFT	0.	NO	0.	0.
63	12000.	270.00	55.00	SOFT	0.	YES	9800.	60.
64	500.	247.50	23.00	SOFT	0.	NO	0.	0.
65	1000.	247.50	9.00	SOFT	0.	NO	0.	0.
66	2000.	247.50	6.00	SOFT	0.	NO	0.	0.
67	4000.	247.50	52.00	SOFT	0.	NO	0.	0.
68	6000.	247.50	50.00	SOFT	0.	YES	5400.	60.
69	8000.	247.50	50.00	SOFT	0.	YES	5400.	60.
70	12000.	247.50	55.00	SOFT	0.	YES	11800.	60.
71	500.	225.00	20.00	SOFT	0.	NO	0.	0.
72	1000.	225.00	8.00	SOFT	0.	NO	0.	0.